

C378
L56 H
1963/65

**Lenoir County
Industrial Education
Center**

CATALOGUE 1963-65

CATALOGUE

Lenoir County Industrial Education Center



1963-65

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CALENDAR 1963-1964

| | |
|---------------------------------------|------------------|
| First Quarter Begins | September 3 |
| NCEA Meeting in New Bern | October 29 |
| Quarter Examinations | November 18, 19 |
| First Quarter Ends | November 19 |
| Registration for Second Quarter | November 20 |
| Thanksgiving Holidays | November 28, 29 |
| Classes Begin | December 2 |
| Christmas Holidays | December 20 |
| Classes Resume | January 2 |
| Quarter Examinations | February 24, 25 |
| Second Quarter Ends | February 25 |
| Registration for Third Quarter | March 3 |
| Classes Begin | March 4 |
| Easter Holidays | March 27, 30, 31 |
| Classes Resume | April 1 |
| Quarter Examinations | May 21, 22 |
| Third Quarter Ends | May 22 |
| Registration for Fourth Quarter | June 1 |
| Classes Begin | June 2 |
| Fourth of July Holiday | July 6 |
| Quarter Examinations | August 19, 20 |
| Fourth Quarter Ends | August 20 |
| Graduation | August 21 |

CALENDAR 1964-1965

| | |
|---------------------------------------|------------------|
| Registration for First Quarter | August 31 |
| Classes Begin | September 1 |
| Labor Day Holiday | September 7 |
| Last Day for Registration | September 8 |
| Quarter Examinations | November 19, 20 |
| Quarter Ends | November 20 |
| Thanksgiving Holidays | November 26, 37 |
| Registration for Second Quarter | November 30 |
| Classes Begin | December 1 |
| Christmas Holidays | December 18 |
| Classes Resume | January 4 |
| Quarter Examinations | February 25, 26 |
| Quarter Ends | February 26 |
| Registration for Third Quarter | March 1 ✓ |
| Classes Begin | March 2 |
| Easter Holidays | April 16, 19, 20 |
| Classes Resume | April 21 |
| Quarter Examinations | May 20, 21 |
| Third Quarter Ends | May 21 ✓ |
| Registration for Fourth Quarter | June 1 |
| Classes Begin | June 2 |
| Fourth of July Holiday | July 5 |
| Quarter Examinations | August 17, 18 |
| Fourth Quarter Ends | August 18 |

General Information

Introduction

The Lenoir County Industrial Education Center is operated jointly by Lenoir County and the State Board of Education. It is an area school serving Jones, Lenoir, Craven, Onslow, Pamlico, and Greene Counties and is located in Lenoir County approximately two miles southeast of Kinston on Highway 70 at the New Bern-Trenton Highway Junction. The program is administered locally by a Board of Trustees and the State Department of Comprehensive Community Colleges. Daniel C. Wise is chief administrative officer.

Purpose

The major purpose of the Lenoir County Industrial Education Center is to provide educational opportunities that will prepare youth and adults to enter and progress successfully in a vocation and to aid in the industrial growth of the area by providing a supply of trained employees for business and industry. Emphasis is placed on the acquiring of basic skills and knowledge and the mastering of related theory for the vocation that the student has chosen. But even more important, a paramount aim of the Center is to encourage the development of attitudes and understandings that will better equip students to accept the privileges and responsibilities of citizens in a democratic society.

Admission Procedure

Eligibility

1. The program is open to high school graduates or any mature person who is a resident of North Carolina. High school equivalency certificates are acceptable.
2. Students must meet the admission requirements for the course of study desired. These standards shall be based upon standardized tests, high school transcripts, and the evaluation of other factors considered necessary to determine the student's ability to meet the job requirements of the desired trade or technology.
3. The Lenoir County Industrial Education Center reserves the right to refuse admission to any applicant who cannot meet the admission requirements or who cannot profit from the instruction.
4. To enroll in extension, upgrading, and updating courses, the applicant should be currently employed in the occupational field in which he seeks training so that he can receive maximum benefit from the course.

Steps for Student's Admission

Before a student can be admitted to the Center he must complete the following steps:

1. Complete the regular application form.
2. Deposit \$14.00 with the Center: \$2.00 for registration \$2.00 for insurance, and \$10.00 for the first month's supply fee.
3. Make acceptable scores on the aptitude test and vocational interests inventories used by the Center for screening and selecting purposes and have these scores sent to the Center.
4. Submit school transcript and a transcript of any college work or other post-high school training.
5. Be interviewed by a representative of the Center.

Transfer Students

Applicants who are transferring from a college or a vocational school must submit a transcript of work completed in addition to the regular application for admission. Credit may be awarded for any course completed successfully at another Industrial Education Center. Failure to submit a record of previous schooling may delay admission. Students seeking to transfer from the Lenoir County Center to another school should request that a transcript be sent to that school.

Unclassified Students

Unclassified students are those who enroll for course credit but not for certificate credit in a chosen curriculum. Such students may later request that their credits be evaluated for certificate credit if they decide to enroll as a regular student. Credits earned while the student is unclassified will be accepted only if proper prerequisites have been completed.

Students who enroll late and have not fully met the requirements for admission into a particular curriculum will also be unclassified until their enrollment has been verified.

Admission as an Auditor

Students will be allowed to audit a course if approval is obtained prior to the beginning of the course. Class participation by an auditor is left up to the instructor. Those who audit a class receive no credit, but they are required to pay the regular course fees, and they are expected to attend class regularly.

Readmission of Students

A student may withdraw from Center classes in case of illness or of special hardship. Withdrawal should be made properly through the Center office. The student who withdraws at the end of the term may re-enter providing work done during the previous term was satisfactory.

Expenses

Expenses are kept to a minimum and consist of a registration fee, a tuition fee, and the cost of textbooks. Students enrolled in the program must buy his own books, which vary in price with the course or subject.

All fees are payable in advance by the quarter or by the course.

1. All students enrolled in Curriculum Programs:

Registration Fee—(Annual) \$ 2.00

Tuition Fee per quarter:

Full time (Maximum) \$30.00

Part time per credit hour \$ 2.00

2. Adult Evening Extension:

Extension:

A course involving two hours of classroom instruction
weekly (per quarter) \$ 6.00

A course involving four hours of laboratory work
weekly (per quarter) \$ 6.00

Courses involving six hours of shop work weekly
(per quarter) \$ 6.00

Welding classes, per quarter \$22.50

Other Courses

Supervisory Development—per course \$ 5.00

Apprenticeship Training—per course \$ 2.00

Licensed Practical Nurse—per course \$ 2.00

Seminars and Workshops—To be computed

Special Courses

Firemanship Courses None

Police Training Courses None

New Industry Training None

Expanding Industry Training None

Fisheries Industry Training None

Payment of Fees

All fees are due at the beginning of each quarter. A student must meet all financial obligations for the quarter before he will be admitted to class, and he should have the necessary textbooks if possible. Evidence of payment of fees will be required by the instructor during the first meeting of each class in both the day and evening programs.

No Refunds on Registration Fees for Adult Evening Extension Classes.

Refunds

New students may receive refunds of tuition fees only if they withdraw applications in person or by letter before August 15. Registration fees are not refunded. After classes have begun no refunds of the tuition supply fee will be made until formal withdrawal from classes has been completed. Two-thirds refund will be made to students who withdraw before the end of 20 school days. No refund will be made after this period of time.

Late Registration

Students who fail to register on the appointed day for each quarter will be required to pay a late registration fee of \$4.00.

Group Insurance

A group accident insurance policy is available to all staff members and students for a fee of \$2.00 for coverage during the school year ending on July 1. The policy covers insured persons while in the building or on the premises from one hour before classes begin until one hour after classes end and while on any school-sponsored trip. Brochures describing coverage can be secured at the business office.

Textbooks

Students may secure textbooks from the business office during the hours posted on the bulletin board in the student lounge.

Academic Regulations

Explanation of Grades

Numerical grades are used to evaluate the student's progress, and a system of quality points is used to calculate his scholarship standing. Quality points are awarded on the following basis:

| | |
|--------|-----------------------------------|
| 90-100 | 3 quality points per quarter hour |
| 80-89 | 2 quality points per quality hour |
| 70-79 | 1 quality point per quarter hour |

Academic Standards

A student must maintain minimum scholarship requirements if he is to remain in the program. At the end of any quarter, in order to continue in his chosen curriculum, a student must have achieved an average of at least 75 in courses taken in that curriculum. Failure to achieve such an average will result in the placing of the student on probation for one quarter and counseling by staff members to ascertain if another choice in curriculum is advisable.

Awarding of Certificates

The Lenoir County Industrial Education Center will award certificates of graduation to students who have met all the requirements of their curriculum and who have made satisfactory grades on any competency tests that are required. The certificate of graduation is authorized by the State Board of Education, which has accredited the Lenoir County Center.

Graduation

Students who qualify for diplomas in Industrial Education Center programs will be expected to take part in formal graduation exercises. Those who participate in the ceremony will be charged a cap and gown rental fee, and all graduating students will pay a diploma fee.

Attendance

All students are expected to attend classes regularly and be in class on time. Students may be absent once per quarter hour of credit for each class, plus an additional absence. Four absences is the maximum number for a given quarter. No tardies are allowed: If a student is late for class, he is marked absent, although he can attend the class if he wishes. Class absences in excess of those granted may disqualify a student from receiving class credit.

Dropping and Adding Courses

A student may drop or add courses during the first week of each quarter. The deadline for dropping a course without an automatic failure is four weeks after the beginning of the term.

Student Activities and Services

Counseling

Every attempt is made by Center staff members to place a student in a curriculum that is fitted to his needs, interests, and abilities. To achieve this objective, the Center offers frequent opportunities for counseling, both before and after enrollment. If a student clearly demonstrates that his aptitude is not sufficient to make his continuation in his chosen curriculum advisable, he will be asked to consider making a change.

Student Government

Students are given the privilege of participating in self-government through the Student Government, which is conducted by students in the daytime program. Its objectives are to unite the student body, to organize and direct student affairs, to promote cooperation between the administration, the faculty, and the student body for the betterment of the school, and to develop student citizenship, honor, and responsibility.

The Student Government meets twice monthly. It has an Executive Council, consisting of a president, vice-president, secretary and treasurer, and parliamentarian, all elected by the student body annually. One senator is elected from each curriculum as its representative during Student Government meetings. Two faculty advisors are elected by the students.

Library

The Center Library is open daily Monday through Friday for the use of students, who may work in the library during the day or check out books for use at home. Over 1,500 volumes have been made available to the Center by the State Board of Education. Eventually the library will contain over 8,000 volumes on specialized and technical subjects, few of which will be found in local or city libraries.

Job Placement

Through its placement program and with the aid of the Employment Security Commission, the Center makes every effort to assist students in finding suitable employment after graduation. Requests are continually being made for graduates at the Center office.

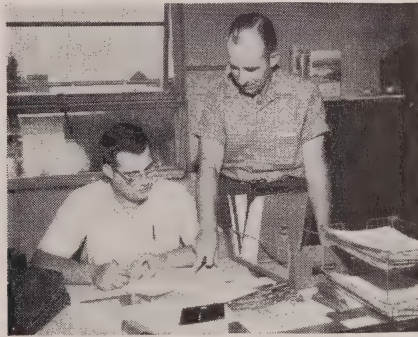
TECHNICAL EDUCATION



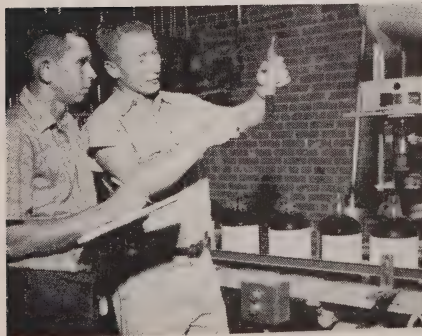
Electronic Technology



Mechanical Technology



Agriculture Technology Business



Chemical Technology

Technical Curriculums

AGRICULTURAL TECHNOLOGY—BUSINESS

INTRODUCTION

Purpose of Curriculum

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing of farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

The Agricultural Technology-Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business. It combines knowledge of agriculture with business training to prepare the graduate for one of the many varied employment opportunities in agricultural business. The specific objectives of the Agricultural Business Curriculum are to develop the following student competencies:

1. Understanding of the principles of organization and management in agricultural business, industries and farm operations.
2. Understanding of the basic principles of our economic system, marketing, credit, price concepts and governmental policies and programs relating to agriculture.
3. Understandings and skill in effective communication for agricultural business.

Job Description

As agricultural business and industry firms expand in size and number they are experiencing rapid changes in technologies of production, sales, and management, in an increasingly competitive environment. Future employees of such firms must be prepared to understand these changes and adapt themselves

accordingly. Successful completion of this curriculum should enable a person to assume responsibilities in an agricultural firm and should enable him to advance within such a business.

Upon graduation from this curriculum an individual should qualify for various jobs in agricultural business and industry such as salesman or store manager in farm supply stores; agricultural field serviceman; salesman, demonstrator or plant manager of feed and food companies; farm products inspector; salesman, or office managers of farm products marketing firms.

AGRICULTURAL TECHNOLOGY — BUSINESS

SUGGESTED CURRICULUM BY QUARTERS

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|-----------------------|--|----------------------------------|-------------|-------------------------------------|
| | | <i>Class</i> | <i>Lab.</i> | |
| <i>FIRST QUARTER</i> | | | | |
| BUS 311 | Business Mathematics | 3 | 0 | 3 |
| ENG 301 | Communicative Skills: Reading Improvement | 2 | 0 | 2 |
| AG 370 | Animal Science | 5 | 2 | 6 |
| AG 310 | Introduction to Agricultural Economics..... | 5 | 2 | 6 |
| | | 15 | 4 | 17 |
| <i>SECOND QUARTER</i> | | | | |
| BUS 320 | Accounting | 5 | 2 | 6 |
| ENG 302 | Communicative Skills: English..... | 3 | 0 | 3 |
| AG 312 | Agricultural Marketing | 5 | 2 | 6 |
| AG 420 | Plant Science | 5 | 2 | 6 |
| | | 18 | 6 | 21 |
| <i>THIRD QUARTER</i> | | | | |
| BUS 321 | Accounting | 5 | 2 | 6 |
| AG 314 | Farm Business Management | 5 | 4 | 7 |
| ENG 303 | Communicative Skills: Technical Writing | 3 | 0 | 3 |
| AG 492 | Fertilizers and Lime..... | 3 | 2 | 4 |
| | | 16 | 8 | 20 |
| <i>FOURTH QUARTER</i> | | | | |
| AG 316 | Agricultural Finance | 5 | 2 | 6 |
| BUS 317 | Sales Development | 3 | 2 | 4 |
| BUS 326 | Business Organization and Operation..... | 3 | 0 | 3 |
| ENG 304 | Communicative Skills: Speech..... | 2 | 0 | 2 |
| | Agriculture or Business: Elective..... | — | — | 5 |
| | | 13 | 4 | 20 |

SUGGESTED CURRICULUM BY QUARTERS

| Course Title | | Course Hours Per Week | | Quarter Hours Credit |
|---------------|--|--------------------------|---------|----------------------------|
| FIFTH QUARTER | | Class | Lab. | |
| AG 306 | Farm Chemicals | 5 | 2 | 6 |
| BUS 318 | Business Law | 5 | 0 | 5 |
| AG 336 | Farm Electrification | 3 | 2 | 4 |
| BUS 310 | Written Sales Communications..... | 3 | 2 | 4 |
| | | — | — | — |
| | | 16 | 6 | 19 |
| SIXTH QUARTER | | | | |
| SOC 301 | Human Relations | 2 | 0 | 2 |
| AG 326 | Agricultural Program and Agencies..... | 3 | 2 | 4 |
| BUS 335 | Business Management | 3 | 0 | 3 |
| BUS 309 | Business Machines | 0 | 4 | 2 |
| AG 502 | Agricultural Business Practicum..... | 198 | Minimum | Hours 6 |
| | Agriculture or Business: Elective..... | — | — | 5 |
| | | — | — | — |
| | | 8 | 6 | 22 |

AGRICULTURAL TECHNOLOGY — BUSINESS

COURSE DESCRIPTIONS

BUS 311 Business Mathematics

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, insurance, taxes and other pertinent uses of mathematics in the field of business.

AG 370 Animal Science

Basic principles of zoology and genetics as related to farm animals. The scientific study of all commercially important classes of farm animals.

AG 310 Introduction to Agricultural Economics

An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main source of change which affect agricultural firms.

BUS 320 Accounting

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises to include practical application of the principles learned.

AG 312 Agricultural Marketing

An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets.

Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco.

AG 420 Plant Science

An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina.

BUS 321 Accounting

Partnership and corporation accounting including a study of payrolls, Federal and State Taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on book-keeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems.

AG 314 Farm Business Management

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager.

Prerequisite: AG 310.

AG 492 Fertilizers and Lime

A review of the source, function, and use of the major and minor plant food elements; commercial fertilizer ingredients; soil acidity, liming materials; application of fertilizer and liming materials.

AG 316 Agricultural Finance

Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. Application of management principles in choosing the amount and kind of credit a farmer should use. A review of lending institutions, repayment schedules, and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal farms and procedures, discounting and depreciation. A review of the historical development of credit programs and institutions in the United States.

Prerequisite: AG 310.

BUS 317 Sales Development

A study of retail, wholesale and speciality selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.

BUS 326 Business Organization and Operation

A study of the legal structures of the various types of business organizations, methods of financing, internal organization and management.

AG 306 Farm Chemicals

A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control.

BUS 318 Business Law

Basic business laws including the law of contracts, negotiable instruments, agency, partnership, corporation, deeds of conveyance, etc., will be covered. A primary objective of the course is to enable the student to know when to consult a professional lawyer.

AG 336 Farm Electrification

A study of the basic principles and systems used in farm electrification. Application to agricultural production. Emphasis is on equipment for controlling the utilization of electricity.

BUS 310 Written Sales Communications

Develops skills in techniques in writing business communications. Emphasis is placed on writing action — getting sales letters and prospectuses. Business reports, summaries of business conferences, spot announcements for radio and television as well as letters involving credit, collections, adjustments, complaints, orders, acknowledgements, remittances, and inquiry are also included in this course.

Prerequisite: ENG 302.

AG 326 Agricultural Programs and Agencies

A review of the public agriculture programs and agencies that provides services for agricultural producers. The objectives, organization, functions and services of these organizations.

BUS 335 Business Management

Principles of business management including overview of major functions of management such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business — qualifications and requirement.

BUS 309 Business Machines

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of 10-key adding machine, full-keyboard adding machine, calculator, posting and accounting machines, card punch, and card verifier.

AG 502 Agricultural Business Practicum

Supervised learning experiences — learning experiences related to the instruction that require development beyond normal school hours and facilities — organized cooperatively between the school administration and selected agricultural industries or businesses. The student will gain practical experience under the supervision of agricultural businessmen and school personnel in an agricultural enterprise. Oral and written reports, field problems, and group discussions will be included.

ELECTRONICS TECHNOLOGY

INTRODUCTION

Purpose of Curriculum

The field of electronics has developed at a rapid pace since the turn of the century. For many years the major concern of electronics was in the area of communication. Developments during World War II and in the period since have revolutionized production techniques. New industries have been established to supplement the need and demand for electronics equipment.

Many opportunities exist for men and women with a technical education in electronics. This curriculum provides a basic background in electronic related theory with practical applications of electronics for business and industry. Courses are designed to develop competent electronics technicians who may take their place as an assistant to an engineer, or as a liaison between the engineer and the skilled craftsman.

Job Description

The electronics technician will start in one or more of the following areas: research, design, development, production, maintenance or sales. He may be an assistant to an engineer, an engineering aide, laboratory technician, supervisor or equipment specialist. His training is similar to that of an engineer, but in less depth and more practical in application. He can function as a liaison between an engineer and the skilled craftsman.

ELECTRONICS TECHNOLOGY

SUGGESTED CURRICULUM BY QUARTERS

| <i>Course Title</i> | <i>Course Hours</i> | | <i>Quarter Hours Credit</i> |
|---|---------------------|-------------|-------------------------------------|
| | <i>Per Week</i> | | |
| | <i>Class</i> | <i>Lab.</i> | |
| <i>FIRST QUARTER</i> | | | |
| MA 301 Technical Mathematics | 5 | 0 | 5 |
| PHY 301 Physics: Properties of Matter | 3 | 2 | 4 |
| ENG 301 Communication Skills: Reading Improvement | 2 | 0 | 2 |
| DD 307 General Drafting | 2 | 3* | 3 |
| ELEC 310 Direct Current Electricity | 5 | 6 | 8 |
| | 17 | 11 | 22 |

*"Manipulative laboratory" involves development of skills and job proficiency. Credit of one quarter hour for each three hours of laboratory.

ELECTRONICS TECHNOLOGY

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|-----------------------|--|----------------------------------|-------------|-------------------------------------|
| <i>SECOND QUARTER</i> | | <i>Class</i> | <i>Lab.</i> | |
| MA 302 | Technical Mathematics | 5 | 0 | 5 |
| PHY 302 | Physics: Work, Energy, Power | 3 | 2 | 4 |
| ENG 302 | Communication Skills: English | 3 | 0 | 3 |
| ELEC 311 | A.C. Electricity | 5 | 6 | 8 |
| | | 16 | 8 | 20 |
| <i>THIRD QUARTER</i> | | | | |
| MA 303 | Technical Mathematics | 5 | 0 | 5 |
| ENG 303 | Communication Skills | 3 | 0 | 3 |
| SOC 301 | Human Relations | 2 | 0 | 2 |
| ELN 312 | Electronics I | 5 | 8 | 9 |
| | | 15 | 8 | 19 |
| <i>FOURTH QUARTER</i> | | | | |
| MA 304 | Technical Mathematics | 3 | 0 | 3 |
| PHY 304 | Physics: Light and Sound | 3 | 2 | 4 |
| ENG 304 | Communication Skills: Speech | 2 | 0 | 2 |
| ELN 313 | Electronics II | 8 | 8 | 12 |
| | | 16 | 10 | 21 |
| <i>FIFTH QUARTER</i> | | | | |
| ISc 301 | Industrial Organization & Management.... | 3 | 0 | 3 |
| ELN 316 | Transistor Applications | 5 | 4 | 7 |
| ELN 317 | Communications and Ultra High Frequency | 2 | 4 | 4 |
| ELN 318 | Special Circuitry | 5 | 4 | 7 |
| | | 15 | 12 | 21 |
| <i>SIXTH QUARTER</i> | | | | |
| SOC 302 | Economics | 3 | 0 | 3 |
| ELN 319 | Instrumentation | 5 | 6 | 8 |
| ELN 320 | Circuit Analysis and Maintenance | 5 | 6 | 8 |
| | | 13 | 12 | 19 |

ELECTRONICS TECHNOLOGY

COURSE DESCRIPTIONS

ELEC 310 Direct Current Electricity

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigorous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchhoff's Laws, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced.

ELEC 311 Alternating Current Electricity

Alternating current and voltage: alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained.

Prerequisite: ELEC 310, MA 301, PHY 301.

ELN 312 Electronics I

A treatment of electron tubes, semi-conductors and their associated circuitry; thermionic emission; diode, triode, tetrode and pentrode characteristics. Theory of semi-conductor diode and transistor operation is studied in detail. Application of vacuum tubes and semi-conductors in power supplies, voltage amplifiers, power amplifiers, and the advantages and disadvantages of each considered.

Prerequisites: ELEC 310, MA 301, PHY 301.

ELN 313 Electronics II

Design and analysis of vacuum tube and transistor oscillators, radio frequency analysis and intermediate frequency amplifiers. Frequency response, stage gain, distortion, noise characteristics and frequency stability will be explored.

Prerequisites: ELN 313, MA 304.

ELN 316 Transistor Applications

Transistor circuitry and design problems. Junction diodes, transistor triodes, tunnel and zener diodes with associated circuitry. Temperature variation, transit time, and frequency response are studied in detail.

Prerequisites: ELN 313, MA 304.

ELN 317 Communications and Ultra High Frequency

Application of previously studied circuits to the broad field of communications and ultra high frequency. Amplitude and frequency modulated transmitters, receivers, wave guides, cavity resonators; klystron, magnetron and traveling wave tubes are discussed.

Prerequisite: ELN 313.

ELN 318 Special Circuitry

The design and analysis of special circuitry; wave shaping, pulse techniques, broad-band amplifiers, diode switches, multivibrators, gates, magnetic amplifiers, chopper amplifiers, clipper and clamping circuits, synchro and servo systems, photo control devices, step counters and other specific application circuitry.

Prerequisites: ELN 314, ELN 316.

ELN 319 Instrumentation

A basic study of sensory devices for detecting changes in pressure, temperatures, sound, light and electricity; the associated circuitry and indicating devices.

Prerequisites: ELN 316, ELN 318.

ELN 320 Circuit Analysis and Maintenance

Systematic analysis of complex circuitry. Methods of locating and correcting malfunctions. Troubleshooting by voltage measurements; resistance measurements, and waveform observations. Schematic reading and interpretation.

Prerequisites: ELN 319, MA 304, PHY 304.

MECHANICAL TECHNOLOGY— DRAFTING AND DESIGN

INTRODUCTION

Purpose of Curriculum

This curriculum guide was prepared for the purpose of outlining a training program for students of drafting and design technology. There are certain identifiable duties which are common to all technicians of this general classification and which comprise the basic areas of technical knowledge they need. This curriculum has been designed for training persons in the accepted performance of these basic duties that will be assigned, and to enable the individual student to become proficient in a short time after he becomes employed in the industry.

Courses in general education have been included to give a student the assurance that comes with education upon a broad base. The technician associates with many levels of thought and expression — administrative, personnel, scientists, engineers, skilled workmen — and must be able to communicate effectively with all levels. Courses in the skills of communication, human relations, economics and the field of industrial organization and management have been provided to assist the student to develop understanding and confidence. Courses containing essential information from related subject areas, such as mathematics, physics, and mechanics have been included in order to provide the student a better academic base for his training.

Job Description

Mechanical drafting and design technicians are concerned with the preparation of drawings for design proposals, for experimental models and items for production use.

These technicians perform many aspects of design in a specialized field, such as the developing of the design of a section, sub-assembly or major component. Investigating design factors and availability of material and equipment, production methods and facilities are frequent assignments. They also design units and

controls from specifications by utilizing drawings of existing units and reports on functional performance or design components in industrial fields based on engineers' original design concepts or specific ideas. They are assigned as coordinators for the execution of related work of other design, production, tooling, material and planning groups. Technicians in this classification will often supervise the preparation of working drawings.

These technicians are employed in many types of manufacturing, fabrication, research development and service industries. Substantial numbers also are employed in communications, transportation, public utilities, construction industries, engineering and architectural consulting firms, and federal, state, and local governments.

MECHANICAL TECHNOLOGY — DRAFTING AND DESIGN

SUGGESTED CURRICULUM BY QUARTERS

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|-----------------------|--|----------------------------------|-------------|-------------------------------------|
| <i>FIRST QUARTER</i> | | <i>Class</i> | <i>Lab.</i> | |
| DD 301 | Technical Drafting | 2 | 6* | 4 |
| MA 301 | Technical Mathematics | 5 | 0 | 5 |
| ENG 301 | Communicative Skills: Reading Improvement | 2 | 0 | 2 |
| PHY 301 | Physics: Properties of Matter | 3 | 2 | 4 |
| MECH 301 | Materials, Tools and Processes | 2 | 2 | 3 |
| | | 14 | 10 | 18 |
| <i>SECOND QUARTER</i> | | | | |
| DD 302 | Technical Drafting | 2 | 6* | 4 |
| MA 302 | Technical Mathematics | 5 | 0 | 5 |
| ENG 302 | Communicative Skills: English | 3 | 0 | 3 |
| PHY 302 | Physics: Work, Energy, Power | 3 | 2 | 4 |
| MECH 302 | Materials, Tools and Processes | 2 | 2 | 3 |
| | | 15 | 10 | 19 |
| <i>THIRD QUARTER</i> | | | | |
| DD 303 | Technical Drafting | 2 | 6* | 4 |
| MA 303 | Technical Mathematics | 5 | 0 | 5 |
| ENG 303 | Communicative Skills: Technical Writing | 3 | 0 | 3 |
| PHY 303 | Physics: Electricity | 3 | 2 | 4 |
| MECH 303 | Materials, Tools and Processes | 2 | 2 | 3 |
| | | 15 | 10 | 19 |

*"Manipulative laboratory" involves development of skills and job proficiency. Credit of one quarter hour for each three hours of laboratory.

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|-----------------------|---|----------------------------------|-------------|-------------------------------------|
| <i>FOURTH QUARTER</i> | | <i>Class</i> | <i>Lab.</i> | |
| DD 304 | Technical Drafting | 2 | 6* | 4 |
| DD 310 | Descriptive Geometry | 2 | 4 | 4 |
| ENG 304 | Communicative Skills: Speech | 2 | 0 | 2 |
| ELN 301 | Industrial Controls | 3 | 2 | 4 |
| MECH 304 | Metallurgy | 3 | 2 | 4 |
| | | — | — | — |
| | | 11 | 14 | 17 |
| <i>FIFTH QUARTER</i> | | | | |
| DD 305 | Design Drafting I | 2 | 6* | 4 |
| MECH 305 | Strength of Materials | 3 | 2 | 4 |
| PHY 305 | Hydraulics and Pneumatics | 2 | 4 | 4 |
| DD 311 | Mechanisms | 3 | 2 | 4 |
| | | — | — | — |
| | | 10 | 14 | 16 |
| <i>SIXTH QUARTER</i> | | | | |
| DD 306 | Design Drafting II | 4 | 6* | 6 |
| DD 312 | Jig and Fixture Design | 2 | 4 | 4 |
| SOC 302 | Economics | 3 | 0 | 3 |
| ISc 301 | Industrial Organization and Management | 3 | 0 | 3 |
| SOC 301 | Human Relations | 2 | 0 | 2 |
| | | — | — | — |
| | | 14 | 10 | 18 |

MECHANICAL TECHNOLOGY — DRAFTING AND DESIGN

COURSE DESCRIPTIONS

DD 301 Technical Drafting

Introduction to drafting and design practices and principles. Attainment of basic skills and techniques of drafting: use of drafting equipment; lettering; freehand orthographic and pictorial sketching; geometric construction; orthographic instrument drawing of principal views; and standards and practices of dimensioning and noting. Methods of reproducing, filing, and storing drawings are studied and the student is introduced to "working drawings."

MECH 301 Materials, Tools and Processes

An overall view of the methods and procedures used to transform raw materials into finished products. Characteristics of metals, woods, and plastics and how these characteristics affect the selection and use of materials and methods of production in the manufacture of an object. Unit production system, sand casting, forging and allied processes, welding, sheet metal working processes, and woodworking processes constitute areas of study.

DD 302 Technical Drafting

The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and

successive revolutions, and sections and conventions will be studied. The introduction of the graphical analysis of space problems involving points, lines, planes, and a combination of these elements. Precision and limit dimensioning practices.

Prerequisite: DD 301.

MECH 302 Materials, Tools and Processes

Study of manufacturing processes involving machining of materials. The operation of lathes, grinders, drills, milling machines, shapers, planers, metal sawing machines, broaching machines, gear cutting machines, and finishing machines. Dimensional control and precision measuring as applied to machining of materials.

Prerequisite: MECH 301.

DD 303 Technical Drafting

Intersection and developments and their practical solutions. Where applicable, model solutions accompanying the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included.

Prerequisite: DD 302.

MECH 303 Materials, Tools and Processes

Mass-production methods and design factors in areas of casting, forging, molding, pressing, drilling, boring, reaming, turning, grinding, milling, and surface finishing.

Prerequisite: MECH 302.

DD 304 Technical Drafting

Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating.

Prerequisite: DD 303.

DD 310 Descriptive Geometry

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem.

Prerequisites: DD 302, MA 302.

MECH 304 Metallurgy

Properties of metals and various methods of changing these properties, classifications of metals, powder metallurgy and factors contributing to production and selection of metals for use.

DD 305 Design Drafting I

Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing,

layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course.

Prerequisites: DD 304, MA 302, PHY 303.

MECH 305 Strength of Materials

Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analysis of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components.

Prerequisites: PHY 303, MA 303.

DD 311 Mechanisms

Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains.

Prerequisites: DD 304, MA 303, PHY 302.

DD 306 Design Drafting II

Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiment. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem.

Prerequisites: DD 305, DD 310.

DD 312 Jig and Fixture Design

Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures and their design.

Prerequisites: DD 305, DD 311.

DISTRIBUTION AND MARKETING TECHNOLOGY

INTRODUCTION

Since 1957, more than half of the employed people in the United States have been engaged in some area of distribution of goods and services. Presidents of fifty of America's leading manufacturing businesses recently stated "... our major problem is in marketing ...". This means that major opportunities exist in the field of marketing and distribution. Young people who are educationally qualified can achieve great personal satisfaction and financial rewards through careers in distribution. Career opportunities are open on all levels from beginning em-

ployee to owner and manager in many areas of distribution and marketing such as advertising; banking; credit; finance; retailing; wholesaling; travel industry; insurance; selling — retail, wholesale, industrial and speciality; transportation; and communications.

In North Carolina, the opportunities in business are especially bright. The population of the State is becoming increasingly urban and much more differentiating in the demands for goods and services. With the increasing industrial development in the State, it becomes essential to market our products more effectively. Also, business has become increasingly competitive, much more highly organized and automated in many instances. This situation limits the better opportunities in business to those with specialized education in distribution beyond the high school level.

The program in Distribution and Marketing Technology has been designed by the Distributive Education Service to provide the educational opportunity for young people to enter this field of work and to supply the demands of business and industry for young men and women qualified to work efficiently in distribution and marketing.

OBJECTIVES

The specific objectives of this program are:

1. To provide education for young people on the post-high school level which will prepare them for positions in distribution and marketing above the basic entry level.
2. To provide competent young businessmen and women who can meet requirements of modern business.
3. To provide an educational program which will enable the individual student to increase his general knowledge and help him realize his greatest potential so as to make a greater personal contribution to his community and state.

ENTRANCE REQUIREMENTS

1. Applicants must be high school graduates or have attained the equivalent education.
2. Applicants must meet the general entrance requirements established by Industrial Education Centers including the use of appropriate test procedures.

3. Applicants must have vocational objectives in some field of distribution and marketing.
4. Applicants must be of sound moral character as indicated by past records and personal habits.

DIPLOMA REQUIREMENTS

A diploma will be awarded to students who complete satisfactorily the prescribed curriculum as outlined herein.

A student earns one credit hour for each twelve hours per quarter in class. For example, a class which meets for one hour three times a week for one quarter is a three (3) credit-hour course. An exception is the laboratory and work experience — one credit-hour is earned for each twenty-four (24) hours of laboratory and one credit is earned for each thirty-six (36) hours of supervised work experience up to a maximum of 7 quarter hours.

SCHEDULE

The program will be conducted on the quarter basis (approximately twelve weeks per quarter) in keeping with the current practices in Industrial Education Centers. It will consist of seven (7) quarters scheduled as follows:

First year: fall, winter, spring, (first, second, third quarter)

Summer: fourth quarter, (work experience and project.)

Second year: fall, winter, spring, (fifth, sixth, seventh quarters.)

DISTRIBUTION AND MARKETING TECHNOLOGY

COURSE REQUIREMENTS

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|----------------------|-------------------------------|----------------------------------|-------------|-------------------------------------|
| | | <i>Class</i> | <i>Lab.</i> | |
| FIRST QUARTER | | | | |
| ENG 301 | Communicative Skills | 2 | 0 | 2 |
| ENG 302 | Communicative Skills | 3 | 0 | 3 |
| BUS 312 | Marketing | 3 | 0 | 3 |
| BUS 311 | Business Mathematics | 3 | 0 | 3 |
| SOC 302 | Economics | 4 | 0 | 4 |
| BUS 313 | Occupational Research I | 1 | 4 | 3 |
| | | 16 | 4 | 18 |

| Course Title | | Course Hours Per Week | | Quarter Hours Credit |
|-----------------|---|--------------------------|------|----------------------------|
| | | Class | Lab. | |
| SECOND QUARTER | | | | |
| BUS 305 | Business Speech | 3 | 2 | 4 |
| SOC 303 | Introduction to Psychology | 3 | 0 | 3 |
| BUS 317 | Sales Development | 3 | 2 | 4 |
| BUS 320 | Accounting I | 5 | 2 | 4 |
| BUS 314 | Occupational Research II | 1 | 4 | 3 |
| | | 15 | 10 | 20 |
| THIRD QUARTER | | | | |
| BUS 310 | Sales Communications | 3 | 2 | 4 |
| BUS 316 | Retailing | 3 | 0 | 3 |
| BUS 312 | Accounting II | 5 | 2 | 6 |
| BUS 319 | Credit Procedures and Problems | 3 | 0 | 3 |
| BUS 315 | Occupational Research III | 1 | 4 | 3 |
| | | 15 | 8 | 19 |
| FOURTH QUARTER | | | | |
| BUS 338 | Work Experience and Project | 0 | 252 | 7 |
| FIFTH QUARTER | | | | |
| BUS 326 | Business Organization and Operation ... | 3 | 0 | 3 |
| BUS 327 | Advertising | 3 | 2 | 4 |
| BUS 328 | Business Insurance | 3 | 0 | 3 |
| BUS 322 | Accounting III | 5 | 2 | 6 |
| BUS 329 | Marketing Research I | 1 | 4 | 3 |
| | | 15 | 8 | 19 |
| SIXTH QUARTER | | | | |
| BUS 332 | Advertising Graphics | 3 | 2 | 4 |
| BUS 333 | Personnel Management | 3 | 0 | 3 |
| BUS 334 | Transportation | 3 | 0 | 3 |
| BUS 318 | Business Law | 5 | 0 | 5 |
| BUS 330 | Marketing Research II | 1 | 4 | 3 |
| Elective* | | 3 | 0 | 3 |
| | | 18 | 6 | 21 |
| SEVENTH QUARTER | | | | |
| BUS 335 | Business Management | 3 | 0 | 3 |
| BUS 336 | Economics of Distribution | 3 | 0 | 3 |
| BUS 337 | Wholesaling | 3 | 0 | 3 |
| BUS 331 | Marketing Research III | 1 | 4 | 3 |
| Elective* | | 6 | 0 | 6 |
| | | 16 | 4 | 18 |

*Elective subjects must be related to the student's career objective and may be selected from courses offered by the Industrial Education Center in which the student is enrolled, with the approval of the Distributive Education Coordinator. Suggested selective subjects are merchandising, warehousing, banking, and typing.

NOTE: The subjects and electives in the program are considered to be normal load. A student may take additional subjects with the approval of the Distributive Education Coordinator based upon his academic record.

DISTRIBUTION AND MARKETING TECHNOLOGY

COURSE DESCRIPTIONS

FIRST QUARTER

English 301 Communicative Skills: Reading Improvement

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. The tachistoscope is used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

English 302 Communicative Skills: English

Designed to aid the student in the improvement of self-expression in both business and technical compositions. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Business 312 Marketing

A study of the marketing structure within the framework of the U. S. Economic system. It includes the study of the movement of goods from producer to consumer through various channels of distribution, the functions of marketing, and the social and economic implications.

Business 311 Business Mathematics

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commissions, insurance, taxes and other pertinent uses of mathematics in the field of business.

Sociology 302 Principles of Economics

The fundamental principles of economics including institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Business 313 Occupational Research I

Orients the student to the world of work by furnishing information about business etiquette, how to apply for a job, learning and following company rules and regulations, employee—employee and employee—employer relations. How to study is covered also.

SECOND QUARTER

Business 305 Business Speech

Develops the ability to speak correctly, persuasively, and with confidence in sales situations, training sessions, business conferences—small and large. Prerequisite: English 302.

Sociology 303 Introduction to Psychology

Provides an understanding of human behavior. Approached as a natural phenomenon subject to scientific study. The unifying concept is the adaptation of the individual to his economic and social environment.

Business 317 Sales Development

A study of the art of selling in a retail, wholesale, and speciality field. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for an execution of sales demonstrations required.

Business 320 Accounting I

This course emphasizes the principles, techniques and tools of accounting. It provides the necessary background understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about the business. A thorough study is made of both service and mercantile enterprises and will include a practice set which will provide practical application of the principles learned.

Business 314 Occupational Research II

Designed to help the student select a specific career objective based upon an individual study of vocations within the field of distribution and marketing.

Prerequisite: Business 313.

*THIRD QUARTER***Business 310 Sales Communications**

Objective is to develop the individual ability to write effective business communications, sales letters, and business reports.

Prerequisite: English 302.

Business 316 Retailing

A study of the function of retailing in the economy. Topics include development of the present retail structure, functions performed, principles governing effective operation, and managerial problems resulting from current economic and social trends.

Business 321 Accounting II

Partnership and corporate forms of business including a study of payrolls, Federal and State taxes. Emphasis is placed on the recording, summarizing and interpreting data from management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of a management problem.

Prerequisite: Business 320.

Business 319 Credit Procedures and Problems

Principles and practices related to the extension of credit, collections procedures, laws pertaining to credit extension and collection.

Business 315 Occupational Research III

Instruction and discussion relative to the selection and planning of the project related to the student's work experience during Business 338.

Prerequisite: Business 314.

FOURTH QUARTER

Business 338 Work Experience and Project

This course includes a minimum of 252 clock hours of related on-the-job work experience during the summer between the first and second school year. This period is referred to as the Fourth Quarter and the student receives seven (7) credit hours therefor. The employing firm and the type of work experience must be approved by the coordinator. As a part of this course, the student will conduct and make a written report on a project related to his job training employment. The project must be of a practical nature and approved by the coordinator and the student's employer. Grade for this course will be determined jointly by the student's employer and the coordinator.

Prerequisite: Business 315.

FIFTH QUARTER

Business 326 Business Organization and Operation

A study of the legal structures of the various types of business organizations, methods of financing, internal organization, and management.

Business 327 Advertising

The role of advertising in a free economy, and its place in the media of mass communications. A study of advertising appeals, product and market research, selection of media, means of testing advertising's effectiveness. Theory and practice of copy writing.

Business 328 Business Insurance

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance.

Business 322 Accounting III

The student is given a thorough knowledge of concepts used in the preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed prior to making a selection as to how these items will be utilized.

Prerequisite: Business 321.

Business 329 Marketing Research I

Designed to acquaint the student with sources of all types of information and data pertaining to business and industry published by business, industry, government, and educational institutions. To teach the student how to interpret statistical charts and data.

SIXTH QUARTER

Business 332 Advertising Graphics

A study of the principles of art to include color, layout, design, topography, printing processes, photoengraving and graphic production procedures as they apply to advertising.

Prerequisite: Business 327

Business 333 Personnel Management

A study of the principles of human relationships, selection of personnel to include interviewing and testing, personnel training.

Business 334 Transportation

A study of the transportation media—their history and development. A practical consideration of the transportation problems in business.

Business 318 Business Law

Provides an introduction to law by developing an understanding of basic business laws as they relate to business. The law of contracts, negotiable instruments, agency, partnership, corporation, deeds of conveyance, etc., will be covered. A primary objective of the course is to provide the student with sufficient knowledge to know when to consult a professional lawyer.

Business 330 Marketing Research II

Objective is to develop an understanding of the objectives of market research studies, how they are planned, conducted, reported and interpreted. Prerequisite: Business 329.

SEVENTH QUARTER

Business 335 Business Management

A fundamental study of principles of business management to include the functions of management and how they are executed.

Business 336 Economics of Distribution

How our business system operates. The free enterprise philosophy is developed followed by study of production, value and price, business cycles and other economic theories.

Prerequisite: Sociology 302.

Business 337 Wholesaling

The development of wholesaling and present day trends in the United States. A study of the functions of wholesaling and how they are effected.

Business 331 Marketing Research III

Objective is to give the student experience in planning, conducting, reporting, interpreting an elementary market research study on an individual or group basis.

Prerequisite: Business 330.

CHEMICAL TECHNOLOGY

INTRODUCTION

This curriculum guide provides a program for instruction of students in the basic knowledge and skills involved in laboratory and plant operations of the chemical industry. Technical knowledge and laboratory techniques are emphasized and a relationship between the theoretical and practical maintained.

Purpose of Curriculum

The curriculum is designed to prepare persons to serve in two distinct roles: (1) research assistant to a chemist in the laboratory; and (2) planning and production assistant to chemical engineers in converting the research chemist's discoveries into actual industrial production. Research laboratory assistants must be well grounded in chemical analysis, testing, and synthesis. Chemical production assistants must have command of a basic knowledge of chemical processing and ability to use main types of equipment and machinery for making chemical products.

This program will provide the basic theoretical knowledge that will enable an individual to become a skilled technician in a rather limited time.

Job Description

Control analyst — Performs quantitative and qualitative chemical analyses of processes involved in a production situation. Tests samples of raw materials to determine that they are within specification limits required for manufacture of desired products. Analyzes samples of product intermediates at manufacturing steps so as to supply data to processing personnel by which they may control reactions involved, to determine whether processing is being performed according to plant specifications, and to solve current production problems. Analysis samples of finished products to determine whether quality warrants its release for shipment, using analytical methods to determine percentages, such as acetone extract, heating loss, or ash content. Prepares laboratory test reports and checks analysis with specifications and consults with laboratory supervisors. Makes special analysis as necessary. May secure samples used.

CHEMICAL TECHNOLOGY*SUGGESTED CURRICULUM BY QUARTERS*

| <i>Course Title</i> | <i>Course Hours</i> | | <i>Quarter</i> |
|--|---------------------|-------------|----------------|
| | <i>Per Week</i> | | <i>Hours</i> |
| <i>FIRST QUARTER</i> | <i>Class</i> | <i>Lab.</i> | <i>Credit</i> |
| CHEM 310 General Chemistry | 3 | 6 | 6 |
| MA 301 Technical Mathematics | 5 | 0 | 5 |
| ENG 301 Communicative Skills: Reading Improvement | 2 | 0 | 2 |
| PHY 301 Physics: Properties of Matter | 3 | 2 | 4 |
| | 13 | 8 | 17 |
| <i>SECOND QUARTER</i> | | | |
| CHEM 311 General Chemistry | 3 | 6 | 6 |
| MA 302 Technical Mathematics | 5 | 0 | 5 |
| ENG 302 Communicative Skills: English | 3 | 0 | 3 |
| PHY 302 Physics: Work, Energy, Power | 3 | 2 | 4 |
| | 14 | 8 | 18 |
| <i>THIRD QUARTER</i> | | | |
| CHEM 312 Quantitative Chemical Analysis | 3 | 6 | 6 |
| MA 303 Technical Mathematics | 5 | 0 | 5 |
| ENG 303 Communicative Skills: Technical Writing | 3 | 0 | 3 |
| PHY 303 Physics: Electricity | 3 | 2 | 4 |
| | 14 | 8 | 18 |
| <i>FOURTH QUARTER</i> | | | |
| CHEM 313 Quantitative Chemical Analysis | 2 | 10 | 7 |
| MA 304 Technical Mathematics | 3 | 0 | 3 |
| ISc 301 Industrial Organization and Management | 3 | 0 | 3 |
| CHEM 314 Physical Chemistry | 3 | 2 | 4 |
| | 11 | 12 | 17 |
| <i>FIFTH QUARTER</i> | | | |
| CHEM 315 Organic Chemistry | 3 | 6 | 6 |
| SOC 302 Economics | 3 | 0 | 3 |
| CHEM 317 Industrial Chemical Analysis | 3 | 10 | 8 |
| | 9 | 16 | 17 |
| <i>SIXTH QUARTER</i> | | | |
| CHEM 316 Organic Chemistry | 2 | 6 | 5 |
| CHEM 318 Industrial Chemical Analysis | 5 | 10 | 10 |
| | 7 | 16 | 15 |

CHEMICAL TECHNOLOGY

COURSE DESCRIPTIONS

| | Course Hours Per Week | | Quarter Hours Credit |
|--|--------------------------|------|----------------------------|
| | Class | Lab. | |
| CHEM 310 General Chemistry | 3 | 6 | 6 |
| An introductory chemistry course serving as a base for future development in the chemical areas. Chemical terms, systems of measurement, atomic structure, states of matter, and the properties of elements, compounds, and mixtures constitute major fields of study. Laboratory work consists of various inorganic reactions and preparations. | | | |
| Prerequisite: None. | | | |
| CHEM 311 General Chemistry | 3 | 6 | 6 |
| A study of the properties of gases, types of chemical reactions, equivalent weights, combining properties of the elements, functions of the periodic table and properties of electrolytes and nonelectrolytes. Classroom theory is supported by extensive laboratory work, preparing and studying the behavior of gases, types of chemical reactions and properties of solutions. | | | |
| Prerequisite: CHEM 310. | | | |
| CHEM 312 Quantitative Chemical Analysis | 3 | 6 | 6 |
| Emphasis is placed on developing laboratory techniques employed in the volumetric analysis of acids and bases. The students will become thoroughly familiar with the principles and procedures of neutralization titration. Classroom work will emphasize the stoichiometric calculations involved in interpreting the results of analysis. Laboratory work will consist of percentage analysis of selected substances. | | | |
| Prerequisite: CHEM 311. | | | |
| CHEM 313 Quantitative Chemical Analysis | 2 | 10 | 7 |
| The more complex types of quantitative analysis. Special emphasis on the theory of oxidation-reduction and gravimetric analysis. Instrumental analysis is introduced and use of modern analytical devices is stressed. The student will become familiar with the principles of redox reactions, ionization constants and pH of solutions. Stress is placed on the stoichiometric calculations of quantitative chemical analysis. Classroom work complements quantitative determinations in the laboratory. | | | |
| Prerequisite: CHEM 312. | | | |
| CHEM 314 Physical Chemistry | 3 | 2 | 4 |
| Atomic theory, states of matter, chemical thermodynamics, molecular properties of solutions, equilibria, phase role, electrochemistry, kinetics, surface chemistry, and photochemistry constitute major areas of study. | | | |
| Prerequisite: CHEM 312. | | | |
| CHEM 315 Organic Chemistry | 3 | 6 | 6 |
| Nomenclature, structure, preparation, properties, and reactions of aliphatic organic compounds. Laboratory work emphasizes techniques. | | | |
| Prerequisite: CHEM 313. | | | |

| | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|--------------------------------------|----------------------------------|-------------|-------------------------------------|
| | <i>Class</i> | <i>Lab.</i> | |
| CHEM 316 Organic Chemistry | 2 | 6 | 5 |

The nomenclature, structure, preparation, properties, and reactions of aromatic organic compounds. Laboratory work emphasizes techniques and involves preparation and analysis of selected organic compounds.

Prerequisites: CHEM 313, CHEM 314.

| | | | |
|---|---|----|---|
| CHEM 317 Industrial Chemical Analysis | 3 | 10 | 8 |
|---|---|----|---|

An industrial laboratory situation is simulated. Principles and techniques learned in previous quarters are utilized in solution of problems common to local industry. It will be the responsibility of the instructor to determine and submit in outline form a program of suitable scope and sequence of topics which he will work out from consultation with his local advisory committee, and accepted by the appropriate State-level authority.

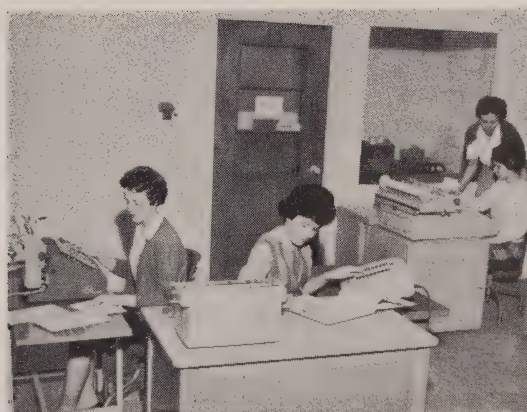
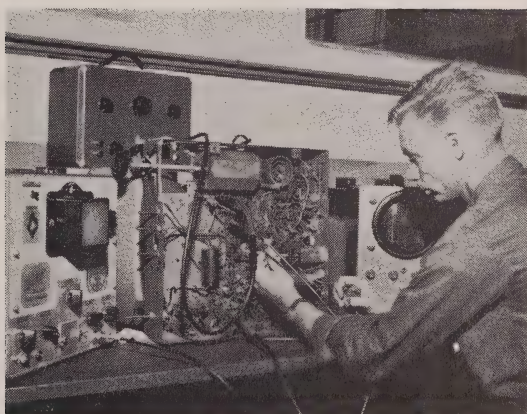
Prerequisites: CHEM 313, CHEM 314.

| | | | |
|---|---|----|----|
| CHEM 318 Industrial Chemical Analysis | 5 | 10 | 10 |
|---|---|----|----|

An industrial laboratory situation is maintained and the emphasis on instrumentation is expanded. Problems of industrial quality control. Plant visitations.

Prerequisite: CHEM 317.

TECHNICAL SPECIALTY



Technical Specialty Curriculums

RADIO AND TELEVISION SERVICING

INTRODUCTION

Purpose of Curriculum

Within recent years improved electronic techniques have provided expanded entertainment and educational facilities in the form of monochrome and color television, frequency modulated radio, high fidelity amplifiers and stereophonic sound equipment. These developments require expanded knowledge and skill of the individual who would qualify as a competent and up-to-date serviceman.

This curriculum guide provides a training program which will provide the basic knowledge and skills involved in the installation, maintenance and servicing of radio, television and sound amplifier system. A large portion of time is spent in the laboratory varifying electronic principles and developing servicing techniques.

Job Description

A radio and television serviceman may be required to install, maintain and service amplitude modulated and frequency modulated home and auto radios, transistorized radios, monochrome and color television sets, intercommunication, public address and paging systems, high fidelity and stereophonic amplifiers, record players and tape recorders.

His work will require meeting the public both in the repair shop and on service calls. A serviceman who establishes his own business will also need to know how to maintain business records and inventory.

CURRICULUM GUIDE

RADIO AND TELEVISION SERVICING

CURRICULUM OUTLINE BY QUARTERS

| Course Title | Course Hours Per Week | | | Quarter Hours |
|---|--------------------------|------|------------|------------------|
| | Class | Lab. | Shop Prac. | Credit |
| FIRST QUARTER | | | | |
| MA 125 Electrical Math | 5 | 0 | 0 | 5 |
| ELEC 122 Direct and Alternating Current | 7 | 8 | 3 | 12 |
| ENG 101 Reading Improvement | 2 | 0 | 0 | 2 |
| | 14 | 8 | 3 | 19 |
| SECOND QUARTER | | | | |
| ELN 122 Vacuum Tube and Circuits | 5 | 10 | 0 | 10 |
| ELN 123 Amplifier Systems | 2 | 0 | 6 | 4 |
| ENG 102 Communication Skills | 2 | 0 | 0 | 2 |
| SOC 101 Human Relations | 2 | 0 | 0 | 2 |
| | 11 | 10 | 6 | 18 |
| THIRD QUARTER | | | | |
| ELN 124 Vacuum Tubes and Circuits | 4 | 4 | 0 | 6 |
| ELN 125 Radio Receiver Servicing | 2 | 0 | 6 | 4 |
| ELN 126 Transistor Theory and Circuits | 5 | 4 | 0 | 7 |
| SOC 103 Management Procedures | 3 | 0 | 0 | 3 |
| | 14 | 8 | 6 | 20 |
| FOURTH QUARTER | | | | |
| ELN 127 Television Receiver Circuits & Servicing | 10 | 0 | 15 | 15 |
| | 10 | 0 | 15 | 15 |
| or | | | | |
| ELN 128 Television Receiver Circuits & Servicing | 5 | 0 | 12 | 9 |
| | 5 | 0 | 6 | 7 |
| Elective (1) | 10 | 0 | 18 | 16 |
| ELECTIVE | | | | |
| ELN 129 Single Side Band Systems | 5 | 0 | 6 | 7 |
| ELN 130 Two-way Mobile Maintenance | 5 | 0 | 6 | 7 |

RADIO AND TELEVISION SERVICING

ELEC 122 Direct and Alternating Current

A study of the structure of matter and the electron theory, the relationship between voltage, current and resistance in series, parallel and series—parallel circuits. Analysis of direct current circuits by Ohm's law and Kirchhoff's law; sources of direct current potentials. Fundamental con-

cepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

ELN 122 Vacuum Tubes and Circuits

An introduction to vacuum tubes and their development; the theory, characteristics and operation of vacuum diodes, semi-conductor diodes, rectifier circuits, filter circuits, triodes and simple voltage amplifier circuits.

Prerequisites: ELEC 122, MA 125.

ELN 123 Amplifier Systems

An introduction of commonly used servicing techniques as applied to monophonic and stereophonic high fidelity amplifier systems and auxiliary equipment. The operation and servicing of inter-communication amplifiers and switching circuits will also be taught.

Prerequisites: MA 125, ELEC 122.

ELN 124 Vacuum Tubes and Circuits

A continuing study of tubes and circuits; the theory, characteristics, and operation of the tetrode and pentode tubes, voltage and power amplifiers, tunable RF amplifiers, oscillators and demodulator circuits.

Prerequisites: ELN 123, ELN 122.

ELN 125 Radio Receiver Servicing

Principles of radio reception and practices of servicing; included are block diagrams of radio receivers, servicing techniques of AM and FM receivers by resistance measurements, signal injection, voltage analysis, oscilloscope methods of locating faulty stages and components and the alignment of AM and FM receivers..

Prerequisites: ELN 123, ELN 122.

ELN 126 Transistor Theory and Circuits

Transistor theory, operation, characteristics and their application to audio and radio frequency amplifier and oscillator circuits.

Prerequisite: ELN 123.

ELN 127 Television Receiver Circuits and Servicing

A study of principles of television receivers, alignment of radio and intermediate frequency amplifiers, adjustment of horizontal and vertical sweep circuits will be taught. Techniques of troubleshooting and repair of TV receivers with the proper use of associated test equipment will be stressed. Additional study of more specialized servicing techniques and oscilloscope waveform analysis will be used in the adjustment, troubleshooting and repair of the color television circuits.

Prerequisites: ELN 126, ELN 125.

ELN 128 Television Receiver Circuits and Servicing

This course, taught in conjunction with an elective, will be a shortened version of ELN 127.

Prerequisites: ELN 126, ELN 125.

ELN 129 Single Side-band Systems

An introductory course of single side-band transmission system with carrier frequency or without and the associated balanced modulatory of phasing system used to produce this type of transmission. Time will be allotted also to the necessary circuitry in the receiver to receive this type transmission.

Prerequisites: ELN 126, ELN 125.

ELN 130 Two-way Mobile Maintenance

A course to acquaint the student with the theory and maintenance of fixed station and mobile station transmitters and receivers. Except for radio laws, sufficient information will be given to qualify the student to take the FCC second class radiotelephone license examination.

Prerequisites: ELN 126, ELN 125.

ENGINEERING AND TECHNICAL SECRETARY

INTRODUCTION

Purpose of Curriculum

The Engineering and Technical Secretary Curriculum is designed to prepare a student for a position in the office of a firm dealing in research, development and production in the scientific fields. The curriculum offers students the necessary secretarial skills and the required background of understanding and appreciation of the scientific method, the beginnings of a technical vocabulary and a feeling of respect for accuracy that will be essential in later work in the field.

A background in typing and shorthand is prerequisite for entrance into this curriculum. An applicant should possess a typing speed of 40 to 50 words a minute and shorthand speed of 70 to 80 words a minute, as established by testing.

Job Description

Graduates of this program may qualify for employment as stenographer-secretaries, technical secretaries, and possibly as private secretaries. They are in demand where engineers and other technical personnel find a need for secretarial help who can understand the specialized language of Electrical, Mechanical, Civil, or Chemical Engineers. Graduates of this program, since they have received a background of science and engineering terminology in addition to their business background, are admirably prepared to work with engineering reports, records and correspondence.

**ENGINEERING AND TECHNICAL SECRETARY
CURRICULUM BY QUARTERS**

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | | <i>Quarter Hours</i> |
|--|----------------------------------|-------------|-------------|--------------------------|
| | <i>Class</i> | <i>Lab.</i> | <i>Shop</i> | <i>Prac. Credit</i> |
| <i>FIRST QUARTER</i> | | | | |
| BUS 111 Statistical Typing | 1 | 4 | 0 | 3 |
| BUS 113 Technical Dictation | 1 | 4 | 0 | 3 |
| ENG 102 Communication Skills | 2 | 0 | 0 | 2 |
| BUS 115 Business Machines | 2 | 2 | 0 | 3 |
| MA 112 Business Mathematics | 5 | 0 | 0 | 5 |
| BUS 117 Accounting I | 2 | 2 | 0 | 3 |
| | 13 | 12 | 0 | 19 |
| <i>SECOND QUARTER</i> | | | | |
| BUS 112 Statistical Typing | 1 | 4 | 0 | 3 |
| BUS 114 Technical Dictation | 3 | 2 | 0 | 4 |
| BUS 116 Business Machines | 2 | 2 | 0 | 3 |
| BUS 118 Accounting II | 2 | 2 | 0 | 3 |
| PHY 104 Applied Physics I | 1 | 2 | 0 | 2 |
| MA 124 Algebra | 5 | 0 | 0 | 5 |
| | 14 | 12 | 0 | 20 |
| <i>THIRD QUARTER</i> | | | | |
| ISc 102 Industrial Organizations | 3 | 0 | 0 | 3 |
| ENG 103 Report Writing | 2 | 0 | 0 | 2 |
| DD 118 Drafting | 2 | 0 | 3 | 3 |
| BUS 120 Office Procedures | 2 | 2 | 0 | 3 |
| PHY 105 Applied Physics II | 1 | 2 | 0 | 2 |
| ISc 110 Industrial Processes I | 3 | 2 | 0 | 4 |
| | 13 | 6 | 3 | 17 |
| <i>FOURTH QUARTER</i> | | | | |
| ISc 112 Technical Illustrations | 1 | 4 | 0 | 3 |
| PHY 106 Applied Physics III | 1 | 2 | 0 | 2 |
| SOC 101 Human Relations | 2 | 0 | 0 | 2 |
| SOC 105 Industrial Economics | 3 | 0 | 0 | 3 |
| ISc 111 Industrial Processes II | 3 | 2 | 0 | 4 |
| BUS 125 Industrial Research | 1 | 4 | 0 | 2 |
| | 11 | 12 | 0 | 17 |

ENGINEERING AND TECHNICAL SECRETARY

BUS 111 Statistical Typing

Instruction emphasizes the development of speed and accuracy, with further mastery of correct typewriting techniques. Remedial instruction is given to correct individual difficulties. Both electrical and manual typewriters used.

BUS 113 Technical Dictation

Development of shorthand power through sustained dictation at high speed. Additional work in specialized phrasing and shortcuts. Emphasis on training the student for stenographic work on a production basis. Consideration is also given to appreciation of office problems, up-to-date business procedure, and the development of initiative and independent thinking.

BUS 115 Business Machines

Students will become familiar with various office machines associated with secretarial duties. Instruction will include the care, use, and practice on full keyboard, adding and listing machines, ten key adding and listing machines, rotary calculator, key driven calculators, fluid process duplicators, bookkeeping machines, mimeograph, and dictating and transcribing machines. Established procedures, practices, and standards found in a modern business office are emphasized.

BUS 117 Accounting I

An introduction to the elements of accounting and general accounting principles are integrated with practice in the use of special journals, with respect to single proprietorship, merchandizing inventory and sales, accounting for cash, banking procedures, payroll accounting, and accounting for a retail store.

BUS 112 Statistical Typing

Emphasis is placed on the development of individual production rates. The student learns the techniques in planning and in typing projects that closely approximate the work in engineering offices. These projects include statistical tabulations, typing on printed forms, reports, manuscripts, and legal documents.

Prerequisite: BUS 111.

BUS 114 Technical Dictation

Terminology in the fields of science and technology are introduced. Through dictation and transcription of subject matter related to the engineering field, the student develops the accuracy, speed, and vocabulary that enable her to meet the stenographic requirements of technical organizations.

Prerequisite: BUS 113.

BUS 116 Business Machines

A continuation of BUS 115 with additional practice on machines available at the Center.

Prerequisite: BUS 115.

BUS 118 Accounting II

A detailed study of the periodic summary, work sheet, trial balance, adjustments, and closing procedures at the end of an accounting period. Application of all accounting principles and procedures of a sole proprietorship through the use of a practice set.

Prerequisite: BUS 117.

MA 112 Business Mathematics

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount; commission, insurance, taxes, and other mathematics in business.

BUS 120 Office Procedure

A course designed to acquaint the student with the responsibilities encountered by a secretary during the workday. A review of the following areas of work is given through simulated office practices: writing, receiving callers, making appointments, taking dictation and transcribing, typing research papers, and telephone technique. A portion of this course will be devoted to filing systems and techniques.

Prerequisite: BUS 112, BUS 114.

BUS 125 Industrial Research

Individual assignments in a carefully selected project will be made during this quarter of work. The student will be given an opportunity to initiate and carry out a project taken from outside the school. The student is responsible for solving a significant problem with a minimum of teacher assistance. Much of the student's time will be spent in the technical library obtaining information and data necessary to complete the written report necessary for the completion of the project.

Prerequisite: Satisfactory completion of courses in the first through third quarter of Engineering and Technical Secretary Curriculum.

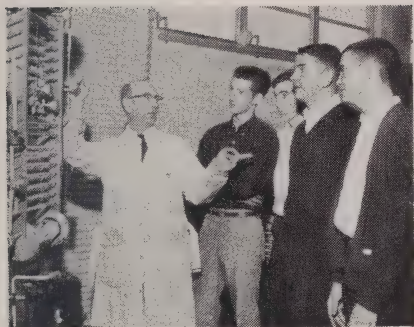
Two Year Business Education Program

The Lenoir County Technical Institute has been approved by the North Carolina Department of Community Colleges to offer a two-year Business Education program leading to the Associate of Applied Science Degree. Students entering this program may have an option in the second year to specialize in any of the following areas:

- Accounting
- Business Administration
- Engineering and Technical Secretary
- Executive Secretary
- Legal Secretary
- Medical Secretary

The curriculum begins with basic courses in all areas; therefore, no previous training in the field of business is necessary.

TRADE EDUCATION



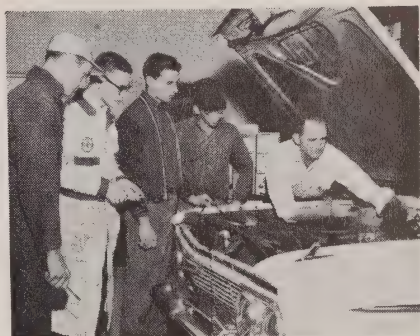
Refrigeration



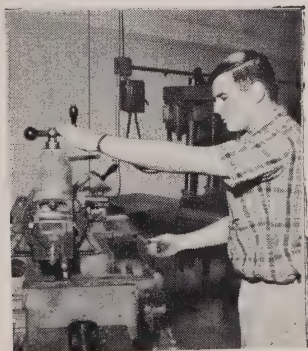
Cosmetology



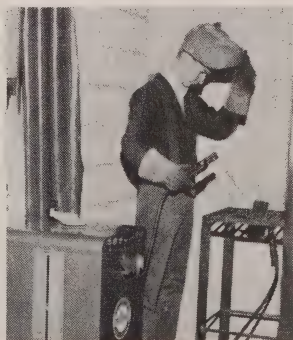
Farm Machinery



Auto Mechanics



Machinist Trade



Welding

Trade Curriculums

AIR CONDITIONING AND REFRIGERATION

INTRODUCTION

Purpose of Curriculum

Surveys have indicated that throughout North Carolina industry there is a growing demand for qualified personnel in refrigeration. With the vast expansion of the frozen food industry, the trained refrigeration technician has unlimited opportunities.

This course is designed to give the technical knowledge and the techniques needed by the student to become proficient and skilled. The laboratory training provides the student with the knowledge and skills necessary to design, plan, install, and service commercial refrigeration equipment.

A technician in the multimillion dollar refrigeration industry must be able to write estimates and specifications, and must know how to install, control, maintain and repair the equipment. He needs a diversified knowledge of related fields such as electricity, drafting, sheet metal, duct design, fluid flow, thermodynamics, and mathematics. All these are included in the refrigeration curriculum.

Job Description

The student who completes this course will be equipped to seek employment in a number of fields that require specialized refrigeration knowledge. He may secure employment as a sales representative, a repairman, a research assistant, a system designer, or a control specialist, or he may choose from numerous opportunities in commercial refrigeration storage and commercial truck refrigeration.

CURRICULUM GUIDE

AIR CONDITIONING AND REFRIGERATION

CURRICULUM OUTLINE BY QUARTERS

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|---|----------------------------------|-------------|-------------------------------------|
| <i>FIRST QUARTER</i> | <i>Class</i> | <i>Lab.</i> | |
| AHR 121 Elements of Refrigeration | 5 | 6 | 8 |
| ELEC 117 Basic Electricity | 3 | 0 | 3 |
| DD 122 Blueprint Reading | 5 | 0 | 5 |
| MA 124 Algebra | 5 | 0 | 5 |
| MECH 112 Welding | 0 | 0 | 1 |
| | 18 | 6 | 22 |
| <i>SECOND QUARTER</i> | | | |
| AHR 122 A.C. & Refrigeration | 5 | 6 | 8 |
| ELEC 118 Applied Electricity | 2 | 2 | 3 |
| MA 120 Plane Geometry | 3 | 0 | 3 |
| AHR 125 Principles of Air Conditioning | 5 | 0 | 5 |
| DD 126 Applied Drafting | 1 | 0 | 2 |
| | 16 | 8 | 21 |
| <i>THIRD QUARTER</i> | | | |
| AHR 123 A.C. and Refrigeration | 5 | 6 | 8 |
| AHR 126 All Year Comfort Systems | 3 | 4 | 5 |
| AHR 128 Automatic Controls | 2 | 2 | 3 |
| SOC 104 Sales and Communications | 2 | 0 | 2 |
| | 12 | 12 | 18 |
| <i>FOURTH QUARTER</i> | | | |
| AHR 124 A.C. and Refrigeration | 3 | 6 | 6 |
| AHR 127 All Year Comfort Systems | 3 | 2 | 4 |
| MECH 120 Sheet Metal and Duct Fabrication | 3 | 4 | 5 |
| SOC 103 Management Procedures | 3 | 0 | 3 |
| | 12 | 12 | 18 |

AIR CONDITIONING AND REFRIGERATION

COURSE DESCRIPTIONS

AHR 121 Elements of Refrigeration

An introduction to the field and terminology of refrigeration. Topics to be included will be basic laws of refrigeration; heat and the methods of heat transfer; use and care of servicing tools, equipment, tubing, and fittings; compressors; refrigerants and temperature controls; types of refrigerants; special testing and servicing equipment. Shop practice will be given in basic refrigeration and such operations as tube bending, flaring, swaging, soldering, identification and proper use of fittings and basic service testing equipment.

AHR 122 Air Conditioning and Refrigeration

Discussions, demonstrations and shop practice on residential cabinets using conventional, hermetic and absorption systems. Cabinet care, controls, system maintenance, and system replacement will be stressed. The student will prepare estimates and submit bids on practical projects involving the major types of domestic heating and air conditioning systems.

Prerequisite: AHR 121.

AHR 125 Principles of Air Conditioning

Included in this course will be the history, theory, and factors covering air conditioning. Instruction will also include temperature measurement, air movement, humidity, psychometric properties, comfort zone, duct systems, air diffusion, air cleaning zone, and testing instruments. Practice in computing system loads, equipment sizing and balancing and the use of charts and tables pertaining to refrigeration equipment.

Prerequisite: AHR 121.

AHR 123 Air Conditioning and Refrigeration

Theory and practice in the installation and service of commercial refrigeration systems. Topics to be studied are the following: Commercial cabinets, walk-in coolers, display cases, frozen food cabinets, condensers, coils, control valves, methods of installation, removal repair and repair estimates, and submitting bids on practical projects involving the major types of commercial refrigeration systems.

Prerequisite: AHR 122.

AHR 126 All Year Comfort Systems

The student studies and receives practice in servicing and installing gas burners, electric heating elements and controls. The applications of various heating devices in liquid heating and controls are studied. Basic principles of installing hot water and low pressure boiler controls, pumps, and coils are covered and suitable installations developed.

Prerequisites: AHR 122, 125.

AHR 128 Automatic Controls

Types of automatic controls and their function in air conditioning systems. Included in the course will be electric and pneumatic controls for domestic and commercial cooling and heating; zone controls; unit heater and ventilator controls; commercial fan system controls; commercial refrigeration controls; and radiant panel controls.

Prerequisites: ELEC 118, AHR 122.

AHR 124 Air Conditioning and Refrigeration

Practice in selecting, installing and servicing of air conditioning systems and accessories. Self contained and remote systems, automotive air conditioning, pumps, wiring, refrigeration piping, air distribution, and comfort zone control, reversing valves, special types of thermostatic expansion valves, and systems of de-icing coils are included in this course. Heat pump installations are practiced, and emphasis will be placed on correct practices of installation and servicing techniques.

Prerequisite: AHR 123.

AHR 127 All Year Comfort Systems

A continuation of AHR 126 with further study of the servicing and installation of oil fired heating equipment. The various types of burners and their methods of operation, installation, and servicing. Practice will be given in the servicing of this equipment and their control devices.

Prerequisite: AHR 126.

MECH 120 Sheet Metal and Duct Fabrication

Properties of various types of sheet metal will be included in the study of sheet metal fabrication. Topics include safety, sheet metal hand tools, cutting and shaping machines, fasteners and fabrication practices, layout methods and the development of duct systems. The student will lay out, develop, fabricate, and install complete duct systems under practical working conditions.

Prerequisites: DD 126, MA 120.

AUTOMOTIVE MECHANICS

INTRODUCTION

Purpose of Curriculum

This curriculum provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

Complexity in automotive vehicles increases each year because of scientific discovery and new engineering. These changes are reflected not only in passenger vehicles, but also in trucks, buses and a variety of gasoline-powered equipment. This curriculum provides a basis for the student to compare and adapt to new techniques for servicing and repair as vehicles are changed year by year.

Job Description

Automobile mechanics maintain and repair mechanical, electrical, and body parts of passenger cars, trucks, and buses. In some communities and rural areas they also may service tractors or marine engines and other gasoline-powered equipment. Mechanics inspect and test to determine the causes of faulty operation. They repair or replace defective parts to restore the vehicle or machine to proper operating condition. They use shop manuals and other technical publications.

Automotive mechanics in smaller shops usually are general mechanics qualified to perform a variety of repair jobs. A large number of automobile mechanics specialize in particular types of repair work. For example, some may specialize in repairing only power steering and power brakes, or automatic transmissions. Usually such specialists have an all-round knowledge of automotive repair and may occasionally be called upon to do other types of work.

AUTOMOTIVE MECHANICS

CURRICULUM BY QUARTERS

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | | <i>Quarter Hours</i> |
|---|----------------------------------|-------------|-------------------|--------------------------|
| | <i>Class</i> | <i>Lab.</i> | <i>Shop Prac.</i> | <i>Credit</i> |
| <i>FIRST QUARTER</i> | | | | |
| AUTO 121 Automotive Engines | 3 | 0 | 12 | 7 |
| MA 120 Fundamentals of Mathematics..... | 5 | 0 | 0 | 5 |
| ENG 101 Reading Improvement | 2 | 0 | 0 | 2 |
| PHY 104 Applied Physics I | 1 | 2 | 0 | 2 |
| | 11 | 2 | 12 | 16 |

SECOND QUARTER

| | | | | |
|--|---|---|----|----|
| AUTO 122 Automotive Electrical and Fuel Systems | 3 | 0 | 12 | 7 |
| PHY 105 Applied Physics II | 1 | 2 | 0 | 2 |
| ENG 102 Communication Skills | 2 | 0 | 0 | 2 |
| DD 121 Blueprint Reading | 3 | 0 | 0 | 3 |
| | 9 | 2 | 12 | 14 |

THIRD QUARTER

| | | | | |
|--|---|---|----|----|
| AUTO 123 Automotive Chassis and Suspensions | 3 | 0 | 12 | 7 |
| AHR 101 Automotive Air Conditioning | 3 | 0 | 0 | 3 |
| SOC 101 Human Relations | 2 | 0 | 0 | 2 |
| MECH 112 Welding | 0 | 0 | 3 | 1 |
| PHY 106 Applied Physics III | 1 | 2 | 0 | 2 |
| | 9 | 2 | 15 | 15 |

FOURTH QUARTER

| | | | | |
|--|---|---|----|----|
| AUTO 124 Automotive Power Train Systems | 3 | 0 | 9 | 6 |
| SOC 103 Management Procedures | 3 | 0 | 0 | 3 |
| AUTO 125 Automotive Servicing | 3 | 0 | 9 | 6 |
| | 9 | 0 | 18 | 15 |

AUTOMOTIVE MECHANICS

COURSE DESCRIPTIONS

AUTO 121 Automotive Engines

Designed to give the student a thorough knowledge in the use, maintenance, and storage of the various hand tools and measuring devices needed in automotive work. A study of the construction and operation of components of automotive engines. The student will learn testing of engine performance; servicing and maintenance for pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing of failure and defects in the various engine mechanisms.

AUTO 122 Automotive Electrical and Fuel Systems

A thorough study of the electrical and fuel systems of the automobile, the electrical system and its components; battery cranking mechanism, generator, ignition, accessories, and wiring. Intensive training in the components and operation of various types of automotive fuel systems. Characteristics of fuels and types of fuel systems for which they are best adapted. The special tools, circuits, and testing equipment for the fuel and electrical system are studied.

Prerequisite: AUTO 121.

AUTO 123 Automotive Chassis and Suspensions

Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of the suspension, steering and braking systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, front end adjustments, types and servicing of brakes, etc.

Prerequisites: AUTO 121, 122.

AHR 101 Automotive Air Conditioning

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system.

Prerequisites: PHY 105, PHY 106.

AUTO 124 Automotive Power Train Systems

Detailed analysis of the components of the automotive power train system, with the emphasis on identification of troubles which develop in these components and the correct servicing and repair. Included are: types of clutches, clutch operation, inspection and servicing clutches; functions of the transmission gears, principles and operation of the various transmission and torque converter types, service and repair; operation, diagnosis and servicing for drive shaft assemblies, rear axles, and differentials.

Prerequisites: PHY 105, PHY 106, AUTO 104.

AUTO 125 Automotive Servicing

Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Extensive use of testing equipment will be made on the actual problem situations. A close simulation to an actual automotive shop will be maintained and every effort will be made to give the student a full range of testing and servicing experience.

Prerequisites: AUTO 121, 122, 123, 124.

FARM MACHINERY MECHANICS

INTRODUCTION

Purpose of Curriculum

The history of the development and introduction of farm machinery is largely the history of what we call "modern civilization." The introduction of tools to cultivate the soil and lighten the labor of the farmer was immediately reflected in an improvement of the standard of living. The major factor in this growth and development has been the replacement of horsepower by power developed from gasoline and electricity.

As agriculture has become mechanized the need for trained specialists has increased. The hoe and scythe or the horse-drawn plow and rake required little repair or service that could not be provided on the farm. Modern machinery, however, is complicated and intricate, and its general adoption and widespread use have created new areas of business opportunity.

This program is organized to provide a broad training to permit entrance into the field best suited to the interest and aptitude of the graduate. Emphasis is placed on the basic fundamental theory and related laboratory and shop techniques with specialization to be developed later in employment.

Job Description

Graduates of this program can quickly adapt themselves for employment in the areas of sales, service, distribution, instal-

lation and maintenance. They may estimate cost and plan equipment installations or provide the service that must be done, not in the factory, but in the field, and done by personnel who thoroughly understand the problems of the farmer-purchaser.

They will make inspections and tests to determine the causes of faulty operation, and repair or replace defective parts to restore the tractor or other gasoline-powered equipment to proper operating condition. They may occasionally be called upon to render service on other types of equipment such as pumps and sprayers, barn and dairy equipment, ventilation and electrical equipment found on the farm.

FARM MACHINERY MECAHNICS

SUGGESTED CURRICULUM BY QUARTERS

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | | <i>Quarter Hours</i> |
|-----------------------|--|----------------------------------|-------------|-------------|--------------------------|
| | | <i>Class</i> | <i>Lab.</i> | <i>Shop</i> | <i>Prac. Credit</i> |
| <i>FIRST QUARTER</i> | | | | | |
| AG 110 | Farm Machinery Engines | 3 | 0 | 12 | 7 |
| MA 120 | Fundamentals of Mathematics | 5 | 0 | 0 | 5 |
| ENG 101 | Reading Improvement | 2 | 0 | 0 | 2 |
| PHY 104 | Applied Physics I | 1 | 2 | 0 | 2 |
| | | 11 | 2 | 12 | 16 |
| <i>SECOND QUARTER</i> | | | | | |
| AG 111 | Farm Machinery Electrical Systems | 3 | 0 | 12 | 7 |
| DD 121 | Blueprint Reading | 3 | 0 | 0 | 3 |
| ENG 102 | Communication Skills | 2 | 0 | 0 | 2 |
| PHY 105 | Applied Physics II | 1 | 2 | 0 | 2 |
| WELD 121 | Welding | 1 | 0 | 3 | 2 |
| | | 10 | 2 | 15 | 16 |
| <i>THIRD QUARTER</i> | | | | | |
| AG 112 | Farm Machinery Fuels and Fuel Systems | 2 | 0 | 9 | 5 |
| AG 113 | Farm Machinery Hydraulics | 3 | 0 | 12 | 7 |
| PHY 106 | Applied Physics III | 1 | 2 | 0 | 2 |
| | | 6 | 2 | 21 | 14 |

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | | <i>Quarter Hours</i> |
|---|----------------------------------|-------------|-------------|--------------------------|
| | <i>Class</i> | <i>Lab.</i> | <i>Shop</i> | <i>Prac. Credit</i> |
| FOURTH QUARTER | | | | |
| AG 114 Farm Machinery Power Train Systems | 2 | 0 | 6 | 4 |
| AG 115 Farm Machinery Suspensions and Implements | 2 | 0 | 3 | 3 |
| SOC 101 Human Relations | 2 | 0 | 0 | 2 |
| SOC 103 Management Procedures | 3 | 0 | 0 | 3 |
| AG 116 Farm Machinery Service and Repair | 2 | 0 | 6 | 4 |
| | 11 | 0 | 15 | 16 |

FARM MACHINERY

COURSE DESCRIPTIONS

AG 110 Farm Machinery Engines

An introduction to farm machinery. Tractor and other farm machinery engines maintenance including: shop procedures, safety, repair tools, tune-up and engine testing equipment. Study of the construction and operation of components of farm equipment engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing.

AG 111 Farm Machinery Electrical Systems

Intensive training in components and operation of tractor electrical systems. Fundamentals of electricity and magnetism and their application to tractor engine electrical systems; batteries, ignition systems, cranking motors, generators and regulators.

Prerequisite: AG 110.

AG 112 Farm Machinery Fuels and Fuel Systems

A thorough study of fuels and fuel systems of gasoline and diesel tractors. Characteristics of fuels, principles and fundamentals of combustion, carburetion, fuel injection, and engine speed governing.

Prerequisite: AG 110.

A concentrated investigation of tractor hydraulic systems consisting of hydraulic principles and components of various hydraulic systems. Hydrostatics, basic circuits, fluids, hydrodynamics and automatic draft control. Identification of trouble, servicing, and repair.

Prerequisite: AG 110.

AG 114 Farm Machinery Power Train Systems

Principles and function of tractor power train systems: clutches, bearings, shafts, and cases, gears and gear trains, differentials, final drives, and planetary systems.

Prerequisite: AG 110.

AG 115 Farm Machinery Suspensions and Implements

Principles and functions of the components of tractor suspensions. Practical instruction in adjustment and repair of suspension, steering, braking, and hitching systems.

Assembly, adjustment, operation, maintenance and repair of tractor-drawn and mounted equipment. Students will receive instruction in principles of operation and diagnosis and correction of troubles in tillage, planting and seeding, pest control and harvesting equipment.

prerequisite: AG 110.

AG 116 Farm Machinery Service and Repair

Opportunity for the student to practice principles and techniques learned in previous courses by means of service and repair work that can be made available. A close simulation to an actual farm machinery shop situation will be maintained, and effort will be made to give the student a full range of testing and servicing experience under both shop and field conditions.

Prerequisite: AG 110.

MACHINIST TRADE

INTRODUCTION

Purpose of Curriculum

This curriculum was prepared to meet a definite need for training of machinists. Surveys recently completed in North Carolina show that many of the existing industries lack time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled craftsmen who have the background knowledge and potential to advance.

This guide is designed to give learners the opportunity to acquire basic skills and the related technical information necessary to gain employment and build a profitable career in the machine shop industry in the State. It is comprised of the joint views of committees responsible for its development.

Job Description

The machinist is a skilled metal worker who shapes metal parts by using machine tools and hand tools. His training and experience enable him to plan and carry through all the operations needed in turning out a machined product and to switch readily from one kind of product to another. A machinist is able to select the proper tools and material required for each job and

to plan the cutting and finishing operations in their proper order so that he can complete the finished work according to blueprint or written specifications. He makes standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining. He often uses precision measuring instruments such as micrometers and gages to measure the accuracy of his work to thousandths of an inch.

This skilled worker must be able to set up and operate most types of machine tools. The machinist also must know the composition of metals so that he can heat and quench cutting tools and parts to improve machinability. His wide knowledge enables him to turn a block of metal into an intricate, precise part.

MACHINIST TRADE

Machine Shop

CURRICULUM OUTLINE BY QUARTERS

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | <i>Quarter Hours</i> | |
|--|----------------------------------|------------------|--------------------------|---------------|
| | <i>Class</i> | <i>Lab. Shop</i> | <i>Prac.</i> | <i>Credit</i> |
| FIRST QUARTER | | | | |
| MECH 121 Machine Shop Theory and Practice | 3 | 0 | 12 | 7 |
| MATH 120 Fundamentals of Mathematics..... | 5 | 0 | 0 | 5 |
| DD 122 Blueprint Reading | 5 | 0 | 0 | 5 |
| ENG 101 Reading Improvement | 2 | 0 | 0 | 2 |
| | 15 | 0 | 12 | 19 |
| SECOND QUARTER | | | | |
| MECH 122 Machine Shop Theory and Practice | 3 | 0 | 12 | 7 |
| MA 123 Machinist Mathematics | 5 | 0 | 0 | 5 |
| DD 123 Blueprint Reading | 3 | 0 | 0 | 3 |
| PHY 104 Applied Physics I | 1 | 2 | 0 | 2 |
| ENG 102 Communication Skills | 2 | 0 | 0 | 2 |
| | 14 | 2 | 12 | 19 |
| THIRD QUARTER | | | | |
| MECH 123 Machine Shop Theory and Practice | 3 | 0 | 12 | 7 |
| MECH 124 Structure of Metals | 3 | 2 | 0 | 4 |
| PHY 105 Applied Physics II | 1 | 2 | 0 | 2 |
| SOC 101 Human Relations | 2 | 0 | 0 | 2 |
| | 9 | 4 | 12 | 15 |

| <i>Course Title</i> | | <i>Course Hours</i> | | | <i>Quarter</i> |
|-----------------------|---|---------------------|-------------|-------------------|----------------|
| | | <i>Per Week</i> | | | <i>Hours</i> |
| <i>FOURTH QUARTER</i> | | <i>Class</i> | <i>Lab.</i> | <i>Shop Prac.</i> | <i>Credit</i> |
| MECH 125 | Machine Shop Theory and Practice ----- | 3 | 0 | 12 | 7 |
| ISc 101 | Industrial Specifications ----- | 2 | 0 | 0 | 2 |
| MECH 111 | Oxyacetylene Welding ----- | 2 | 0 | 3 | 3 |
| MECH 126 | Heat Treating Practice ----- | 0 | 0 | 3 | 1 |
| ISc 102 | Industrial Organizations ----- | 3 | 0 | 0 | 3 |
| | | 10 | 0 | 18 | 16 |

MA 123 Machinist Mathematics

Fundamental geometric concepts and construction of plane and solid figures, surface and volume measurements, and related problems; introduction to trigonometry of the right triangle. Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems.

Prerequisite: MA 120.

MECH 123 Machine Shop Theory and Practices

Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculation, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as a vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder.

Prerequisites: MECH 121, MECH 122.

MECH 124 Structure of Metals

Elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

MECH 125 Machine Shop Theory and Practices

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry.

Prerequisites: MECH 121, MECH 122, MECH 123.

MECH 111 Oxyacetylene Welding

Basic welding procedures and practice. The trainee will gain experience in the gas welding of small parts and tools. This course will present gas welding as it may be used by the machinist in the repair and manufacture of tools and equipment.

MECH 126 Heat Treating Practice

Working knowledge of the methods of treating ferrous and nonferrous metals. The effects of hardening, tempering, and annealing upon the structure and physical properties of metals. Trainees will be given the opportunity to acquaint themselves with the equipment and processes of heat treating.

Prerequisite: MECH 124.

WELDING

INTRODUCTION

Purpose of Curriculum

As industry moves forward and expands, more and more trained welders will be needed. Surveys indicate that approximately 56 welding technicians will be needed in North Carolina by 1964 and that only five of this number will be trained in this state. By 1966, it is estimated that 835 welders will be needed.

This course will prepare a student for employment which can provide the opportunity to develop as a skilled welder. Included in the curriculum are courses in welding theory and practices, applied mathematics, manufacture of metals, applied science, electricity, blueprint reading and other subjects related to the welding trade.

Job Description

Welding opportunities for the trained young man are unlimited, and jobs in this field offer job security and good pay. Welders can seek jobs in many industries since many of the parts used in automobiles, air planes, refrigerators, and thousands of other products are joined by welding.

CURRICULUM GUIDE

WELDING

CURRICULUM OUTLINE BY QUARTERS

| <i>Course Title</i> | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|---|----------------------------------|-------------|-------------------------------------|
| <i>FIRST QUARTER</i> | <i>Class</i> | <i>Lab.</i> | |
| ENG 101 Reading Improvement | 2 | 0 | 2 |
| MATH 122 Mathematics | 3 | 0 | 3 |
| WELD 124 Elementary Metallurgy | 1 | 2 | 2 |
| WELD 127 Hand and Power Tools | 1 | 1 | 1 |
| DD 122 Blueprint Reading I | 3 | 2 | 4 |
| WELD 120 Oxyacetylene Welding, Cutting, Theory and Practice | 6 | | 13 |
| | 16 | 8 | 25 |
| <i>SECOND QUARTER</i> | | | |
| SOC 302 Economics | 3 | 0 | 3 |
| MATH 123 Mathematics | 4 | 0 | 4 |
| WELD 125 Elementary Metallurgy | 2 | 3 | 4 |
| ELEC 117 Electricity | 1 | 2 | 2 |
| WELD 121 Arc Welding Theory and Practice | 6 | 8 | 13 |
| | 16 | 13 | 26 |
| <i>THIRD QUARTER</i> | | | |
| WELD 126 Metallurgy and Heat Treating | 1 | 3 | 3 |
| SOC 101 Human Relations | 2 | 0 | 2 |
| DD 123 Blueprint Reading II | 1 | 3 | 3 |
| WELD 123 Testing Welded Joints | 2 | 3 | 4 |
| WELD 122 Inert Gas Welding, Pipe Welding Theory and Practice | 6 | 8 | 13 |
| | 12 | 17 | 25 |

WELDING

WELD 124 Elementary Metallurgy I

This course will give a history of the manufacturing, methods of manufacturing, the modern blast furnaces, cast iron, malleable iron, wrought iron, the Bessemer Converter for steel, the open hearth furnace for steel, and the electric furnace for steel.

WELD 127 Hand and Power Tools

This course is designed to introduce the student to the correct use of hand tools found in the metal area. Also power tools used to work with metals are demonstrated. Each student will be required to do actual work requiring the use of hand and power tools.

WELD 120 Oxyacetylene Welding, Cutting Theory and Practice

An introduction to the history of oxyacetylene welding; the principles of welding and cutting; the equipment and how to assembly it; lighting and shutting off the torch. Also included are welding procedures, flame cutting and filet welding, and practice on heavy guage metals using the different size torches.

WELD 125 Elementary Metallurgy II

A study of physical properties of iron and steel, alloy metals, effect of carbon on steel and iron, the iron carbon diagram, and the constitution diagrams of alloys. Laboratory experiments with a variety of metals.

COSMETOLOGY

3 QUARTERS

High School Education required:

| <i>Course Title</i> | | <i>Course Hours Per Week</i> | | <i>Quarter Hours Credit</i> |
|-----------------------|---------------------------------------|----------------------------------|-------------|-------------------------------------|
| | | <i>Class</i> | <i>Lab.</i> | |
| FIRST QUARTER | | | | |
| COS 101 | Introduction to Cosmetology | 5 | 2 | 6 |
| COS 102 | Personality | 1 | 2 | 2 |
| COS 103 | Bacteriology | 2 | 1 | 2 |
| COS 104 | Sterilization | 1 | 3 | 2 |
| COS 105 | Anatomy | 5 | 6 | 8 |
| COS 106 | Chemistry | 4 | 1 | 5 |
| COS 107 | Safety | 1 | 1 | 0 |
| | | 19 | 16 | 25 |
| SECOND QUARTER | | | | |
| COS 108 | Hair, Shampoo & Rinse | 0 | 1 | 0 |
| COS 109 | Scalp Treatments | 2 | 1 | 3 |
| COS 110 | Haircutting | 1 | 2 | 2 |
| COS 111 | Hair Styling | 2 | 7 | 6 |
| COS 112 | Permanent Waving | 2 | 12 | 8 |
| COS 113 | Tinting & Bleaching | 1 | 3 | 3 |
| COS 114 | Safety | 1 | 0 | 1 |
| | | 9 | 26 | 23 |
| THIRD QUARTER | | | | |
| COS 115 | Theory of Massage | 2 | 1 | 2 |
| COS 116 | Skin | 2 | 1 | 3 |
| COS 117 | Facials | 1 | 3 | 2 |
| COS 118 | Electricity & Electrolysis | 2 | 2 | 3 |
| COS 119 | Nails | 2 | 1 | 3 |
| COS 120 | Manicuring | 1 | 2 | 2 |
| COS 121 | Disorders of Hair, Skin & Nails | 6 | 1 | 7 |
| COS 122 | Managment | 4 | 2 | 5 |
| COS 123 | Safety | 1 | 1 | 1 |
| | | 21 | 14 | 28 |

COSMETOLOGY

COS 101 Introduction to Cosmetology

This course gives the student a background for the profession and an understanding of the responsibilities involved.

COS 102 Personality

This course is to develop a pleasing personality and charm necessary to every one in the beauty field.

COS 103 Bacteriology

A study of bacteria helps to give a background for preventing the spread of disease in the shops.

COS 104 Sterilization

This is an integral part of the complete training program consisting of instruction in sanitary measures.

COS 105 Anatomy

Knowledge of the structure and functions of the human body forms the scientific basis for treatment.

COS 106 Chemistry

This subject has a direct bearing upon beauty shop work so the cosmetologist should become familiar with the fundamentals of chemistry.

COS 108 Hair, Shampoo, and Rinse

Hair—7 hours. The study of hair is of paramount importance to the hairdresser. The student learns its structure, characteristics and qualities.

Shampoo—8 hours. This course covers the practical training necessary to develop the manipulative skill for shampooing.

Rinses—7 hours. The student becomes familiar with the application of rinses and mixing colors.

COS 109 Scalp Treatment

A practical course in which the student becomes skilled in treating scalp and hair conditions.

COS 110 Haircutting

Skill in the use of scissors and razors for shaping the hair is developed in this course.

COS 111 Hairstyling

Students receive training and obtain extensive practice in the proper use of pin curls, brushing, combing.

COS 112 Permanent Waving

The student learns the method of permanent waving as well as analysis of hair.

COS 113 Tinting and Bleaching

Tinting—20 hours. This is a fundamental course in application of various shades of color to all textures of hair.

Bleaching—25 hours. Includes all methods of removing color from the hair.

COS 115 Theory of Massage

Basic manipulations are learned and techniques are employed in beauty treatments.

COS 116 Skin

Knowledge of structure, functions, and characteristics is given to aid students in administering study and hygienic care to skin.

COS 117 Facials

Practice is given in the techniques of facial treatments for various types of skin and skin disorders.

COS 118 Electricity and Electrolysis

A course which is essential in developing and understanding use of electrical equipment

COS 119 Nails

A study of the structure, functions and disorders of nails is made.

COS 120 Manicuring

The student learns the correct procedure for giving a manicure and the shaping of nails to suit individual.

COS 121 Disorders of Skin, Nails and Hair

The cause, identification, and treatment of common skin disorders and scalp diseases.

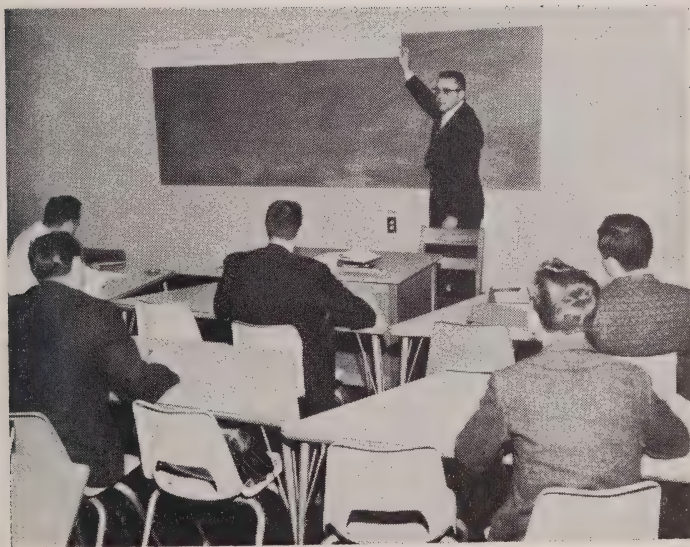
COS 122 Management

In this course the student learns business principles, bookkeeping, salesmanship and psychology needed to operate a beauty shop.

COS 107, 114, 123 Safety

The safety practices in beauty shops are learned in this course and the application of first aid in case of accident.

RELATED COURSES



Technical Math — Slide Rule

Related Courses

| | <i>Course Hours Per Week</i> | | | <i>Quarter Hours</i> |
|---|----------------------------------|-------------|--------------------|--------------------------|
| | <i>Class</i> | <i>Lab.</i> | <i>-Shop Prac.</i> | <i>Credit</i> |
| DD 118 Drafting | 2 | 0 | 3 | 3 |
| An introductory course in drafting and the principles of orthographic drawing. Lettering, applied geometry, orthographic principal views, dimensioning and orthographic reading will constitute the major part of the instruction. Drawing tools will be used in making orthographic drawings. | | | | |
| DD 121 Blueprint Reading | 3 | 0 | 0 | 3 |
| Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures, and notes. | | | | |
| DD 122 Blueprint Reading | 5 | 0 | 0 | 5 |
| Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. | | | | |
| DD 123 Blueprint Reading | 3 | 0 | 0 | 3 |
| Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: DD 122. | | | | |
| DD 307 General Drafting | 2 | 3 | 3 | |
| An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized. | | | | |
| ENG 101 Reading Improvement | 2 | 0 | 0 | 2 |
| A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition. to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed. | | | | |

ENG 102 Communication Skills 2 0 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

ENG 103 Report Writing 2 0 0 2

Brief review of English grammar, spelling, and punctuation. Concentrated effort will be applied to the fundamentals of good writing; sentence structure, proper development of descriptive reporting, and the mechanics of report construction. Practice in writing letters and various report forms will be given and some time will be devoted to oral speech and note taking.

Prerequisite: ENG 102.

ENG 301 Communicative Skills:**Reading Improvement** 2 0 2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

ENG 302 Communicative Skills: English 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

ENG 303 Communicative Skills:**Technical Writing** 5 0 5

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: ENG 302.

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

ISc 101 Industrial Specifications 2 0 0 2

Organizing and studying machine tool and hand tool specifications, job sheets and procedure sheets. Catalogs, specification sheets, and manufacturer's handbooks serve as reference sources.

ISc 102 Industrial Organizations 3 0 0 3

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and factors constituting product cost.

ISc 110 Industrial Processes 3 2 0 4

A general survey of the basic principles and concepts of mechanics, electricity and chemistry. An acquaintance with basic handbooks and periodicals associated with technical areas such as electronics—electrical, drafting, furniture, textiles and printing. Lectures, demonstrations, and laboratory projects are used to provide a foundation for understanding the technicians and engineer's activities and for developing a knowledge of technical terminology.

ISc 111 Industrial Processes II 3 2 0 4

An acquaintance with the use in industry of metals, woods, plastics, rubber, textiles, paper, stone, clay, glass and chemicals. Familiarization with tools, machines, processes used to produce machines, appliances, furniture, textile and printed material. Consideration is given to job shop and production line techniques. Emphasis throughout the course is on trade and technical terms and a knowledge of what is done in the production areas of industrial enterprises. Lectures, demonstrations, laboratory work, and plant visitations are used.

Prerequisite: ISc 110.

ISc 112 Technical Illustrations 1 4 0 3

The student will prepare charts and graphs for visual presentations and reproduction in technical publications. Sample layouts, using prepared art work; lettering and outline templates; and adhesive backed tapes will be made. The student will work with various media and will utilize office copying machines, blueprint machines, overhead projectors, and transparency materials. A practical course on the proper use of visual aids and visual presentations.

Prerequisite: DD 118.

ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

MA 120 Fundamentals of Mathematics 5 0 0 5

Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.

MA 124 Algebra 5 0 0 5

Basic concepts and operations of algebra: historical background of our base-10 number system; algebraic operations; addition, subtraction, multiplication and division; fractions, letter representation, grouping, factoring, ratio and proportions, variation; graphical and algebraic solution of first degree equations; solution of simultaneous equations by: addition and subtraction, substitution, graphing; exponents, logarithms, tables and interpolation.

MA 125 Electrical Mathematics 5 0 0 5

An introductory algebra course with trigonometry and vectors needed in alternating current: algebraic operations of addition, subtraction, multiplication and division; use of letters and signs, grouping, factoring; exponents, ratios and proportions; algebraic and graphic solutions of first-degree equations; introduction to trigonometric functions, their graphs and applications to right triangles. Addition, subtraction and resolution of vector quantities.

MA 301 Technical Mathematics 5 0 5

The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.

MA 302 Technical Mathematics 5 0 5

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

MA 303 Technical Mathematics 5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate system and their applications constitute other areas of study.

Prerequisite: MA 302.

MA 304 Technical Mathematics 3 0 3

A further study of analytical geometry, algebra, and calculus: the binomial expansion, arithmetic and geometric progressions, polynomial functions and methods of solution, integration techniques and use of integral tables, polar equations, and an introduction to solid analytical geometry.

Prerequisite: MA 303.

MECH 112 Welding 0 0 3 1

Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding; bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisite: MA 301, PHY 301.

PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course.

PHY 304 Physics: Light and Sound 3 2 4

A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized.

Prerequisites: MA 303, PHY 302.

PHY 305 Hydraulics and Pneumatics 2 4 4

The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs.

Prerequisite: PHY 302.

PHY 104 Applied Physics 1 2 0 2

Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

PHY 105 Applied Physics II 1 2 0 2

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

Prerequisite: PHY 104.

PHY 106 Applied Physics III 1 2 0 2

Physical principles of force, energy, work and power; equilibrium and the laws of motion; the principles of machines, mechanical advantage, and transmission of power in practical applications and the use of vectors, and graphical presentations.

Prerequisite: PHY 104.

SOC 101 Human Relations 2 0 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

SOC 103 Management Procedures 3 0 0 3

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

SOC 105 Industrial Economics 3 0 0 3

A course designed to help the student understand present day economic problems. Topics include: production, consumption, exchange and distribution, money and credit, business fluctuations, labor and management relations, and challenges to our system of free enterprise.

SOC 301 Human Relations 2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

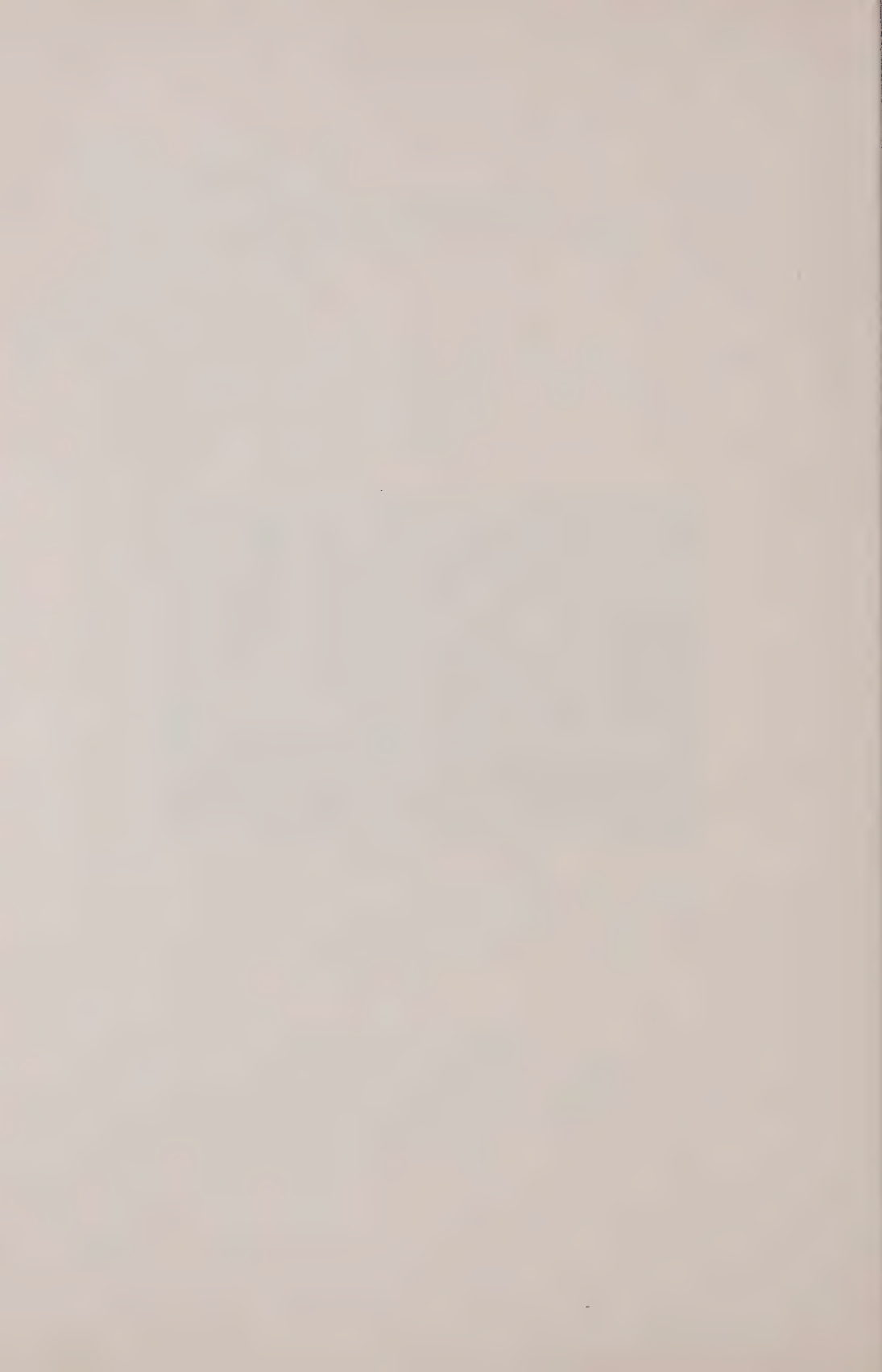
WELD 121 Welding 1 0 3 2

The various processes used for joining materials by welding are discussed. Lecture, demonstrations and practice cover the oxyacetylene and arc welding processes, filler metals used, gases, currents, weldability of metals. Instruction is given in the set-up and safe operation of oxyacetylene welding apparatus. Students prepare joints by both hand and machine cutting with the oxyacetylene torch.

ADULT EVENING EXTENSION



Electronics — Upgrading Class



Adult Evening Program

GENERAL INFORMATION

Registration:

Students may register for courses listed in this catalogue on Tuesday and Wednesday nights, first Tuesday of September after Labor Day, beginning at 7:00 P.M. at the Lenoir County Industrial Education Center, Highway 70 East, Kinston, North Carolina.

Eligibility:

Only people who have finished high school or who are more than 16 years old, if they have not finished high school, will be eligible to take these courses. In cases where a course must be preceded by another course, it will be indicated in the course descriptions.

There is no geographical limitation on eligibility. People from neighboring counties, such as Craven, Jones, Onslow, Greene, Pamlico, Carteret Counties, will be welcomed.

Costs to Students:

There will be a tuition fee for students to defray the expense of enrollment. Records will be kept by the supervising center.

Students will be expected to purchase the necessary textbooks and manuals. This cost will vary with the course. Books may be purchased through the Industrial Education Center at cost plus transportation.

ALL FEES FOR BOOKS, TUITION AND SUPPLIES ARE DUE AND PAYABLE AT THE BEGINNING OF THE COURSE.

Where Classes will Meet:

All courses will meet in classrooms of the Lenoir County Industrial Education Center, Kinston, N. C., unless otherwise specified or determined. A schedule showing room numbers will be available as soon as possible after registration.

When Classes will Meet:

Classes may meet between the hours of 4:30 and 10:30 on weekday evenings, twice weekly. Class periods will customarily be two and three hours in length. A schedule showing meeting nights and hours will be available as soon as possible after registration.

When Courses will Begin:

Following registration, there will be a brief but necessary lapse of time to review class rolls, secure needed instructors, and arrange the schedule. This interval will be as short as possible. Every effort will be made to avoid conflicts and to arrange courses for the convenience of the students. It will be recognized that this will not always be possible. Students who complete registration will be notified by mail when classes begin.

Courses Not Listed in Catalogue:

The selection of courses listed herein was based on a survey made during the past school year. It is possible that registration will show different choices. There may not be enough demand for courses listed here to justify offering them. There may be courses not listed for which there is demand. In either case, when there is enough demand to justify a course, it will be offered.

Prospective students are urged to come to registration even though they are not interested in any of the courses listed. They may register for other courses with the prospect that they will be offered if requested by enough students. Normally fifteen students registered and enrolled will justify offering a given course of instruction.

TYPES OF PROGRAMS

Students may choose one of three types of program in scheduling courses at the Center.

1. Full-time Preparatory — This is a program organized for adults and out-of-school youth who desire to pursue a

trade preparatory or technical course on a full-time basis. Classes, laboratories, and shop periods are scheduled for a minimum of six hours a day.

2. Half-time Preparatory — Adults, and out-of-school youth may enroll for a trade preparatory or technical course on a half-time basis with classes scheduled either during the day or night. This program requires a minimum of three hours daily for four or five days a week in classroom, shop, and laboratory.
3. Adult Evening Extension, Upgrading, and Updating — This program is organized for apprentices, trainees, tradesmen, mechanics, industrial workers, agricultural workers, farmers, sales and marketing personnel, pesticide handlers, and manufacturers and distributors of agricultural products. Classes are offered at night in such courses as Blueprint Reading, Practical Mathematics, Drafting, Welding, Electricity, Automatic Transmissions, National Electric Code, National Plumbing Code, Pesticides, Fertilizers, Gas and Diesel Engines, Farm Management, Farm Records and Accounts, Swine Production, Farm Credit, Salesman Techniques, Practical Nursing, Business Law, Feed Mill Operation, and Grain Handling. Courses usually last from 18 hours to 144 clock hours and meet at least two evenings weekly.

Other Classes

1. Supervisory Development Training — Classes in such subjects as Quality Control, Reading Improvement, Job Instruction, Job Methods, and Job Relations are provided for management, mid-management, supervisors, foreman, and foreladies in trades or industry.
2. Adult Distributive Education — Classes are offered in Personnel Selection and Training, Profitable Store Layout, Merchandising Methods, and Shop Prevention for management, mid-management, supervisors, and business owners.
3. Firemanship Service Training — Fire fighting techniques, pump operations, and fire control methods are taught by certified instructors in this organized instruction in fire service training, especially designed for volunteer fire departments, both large and small.
4. New and Expanding Industry Classes — This program is designed to assist new and expanding industries in train-

ing in advance a group of skilled production workers to staff new incoming industries or an expanding industry. The Center stands ready to assist the Chamber of Commerce and Industrial Development Committees in planing the training needs for prospective industrial plants or expanding industries already existing.

CATALOGUE OF COURSE OFFERINGS

1963-1964

(Students are urged to read these course descriptions carefully. They will give a better indication of the content of the courses in some cases than the titles.)

Engineering and Technical Secretary Courses

The Engineering and Technical Secretary Courses are designed to prepare a student for a position in the office of a firm dealing in research, development and production in the scientific fields. The courses offer students the necessary secretarial skills and the required background of understanding and appreciation of the scientific method, the beginnings of a technical vocabulary and a feeling of respect for accuracy that will be essential in later work in the field.

A background in typing and shorthand is prerequisite for entrance into these courses. An applicant should possess a typing speed of 40 to 50 words a minute and shorthand speed of 70 to 80 words a minute, as established by testing.

ENG 102 and 103 Communication Skills

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Concentrated effort will be applied to the fundamentals of good writing, proper development of descriptive reporting, and the mechanics of report construction. Practice in writing letters and various report forms will be given and some time will be devoted to oral speech and note taking.

BUS 111 and 112 Statistical Typing

Instruction in this course emphasizes the development of speed and accuracy. Remedial instruction is given for the correction of individual difficulties. Emphasis in this course is placed on the development of individual production rates and the techniques in planning and in typing projects that closely approximate the work in an engineering office. These projects include statistical tabulation, typing on printed forms, reports, manuscripts and legal documents.

BUS 113 and 114 Technical Dictation

Development of shorthand power through sustained dictation at high speed. Additional work in specialized phrasing and shortcuts is included. Emphasis is placed on training the student for stenographic work on a production basis. Consideration is also given to appreciation of office problems, up-to-date business procedures, and the development of initiative and independent thinking. Terminology in the fields of science and technology are introduced in this specialized course. Through dictation and transcription of subject matter related to the engineering field, accuracy, speed and vocabulary are developed to meet the stenographic requirements of technical organizations.

BUS 115 and 116 Business Machines

Students will become familiar with various office machines associated with secretarial duties. Instruction will include the care, use, and practice on full keyboard, adding and listing machines, ten key adding and listing machines, rotary calculators, key driven calculators, fluid process duplicators, bookkeeping machines, mimeograph, dictating and transcribing machines, and telephone. Established procedures, practices and standards found in modern business offices are emphasized throughout the course.

BUS 117 and 118 Accounting

The elements of accounting and general accounting principles are integrated with practice in the use of special journals, with respect to single proprietorship, merchandising inventory and sales, accounting for cash, banking procedures, payroll accounting, and accounting for a retail store. A detailed study of the periodic summary, work sheet, trial balance, adjustments and closing procedures at the end of an accounting period. An opportunity to apply all accounting principles and procedures of a sole proprietorship through the use of a practice set.

MA 112 Business Mathematics

Mathematical operations and their applications to business: payrolls, price marking; simple and compound interest, discount; commission; inventory; insurance; taxes; and other mathematics in business.

Auto Mechanics

A review of the basic fundamentals of auto mechanics, including engines, transmissions, ignition and electrical systems, cooling systems, manual and power steering, and other parts of the automobile. Upgrading courses in each of these areas may be offered to mechanics. A group of at least 15 students is necessary to form a class.

Engines and Transmission—60 hours

Carburetor and Electrical Systems—60 hours

Welding

The teaching of practical skills in this trade through shop training and practice. The following courses are offered.

Electric Arc Welding

Gas-acetylene Welding

Helium-arc Welding

Blueprint Reading

Instruction in the recognition of signs, symbols, lines, dimensions, shapes, and forms found on blueprints of all types. The actual reading of working drawings and blueprints is introduced.

Air Conditioning and Refrigeration

Courses for upgrading mechanics employed in this field. Three phases of the subject are offered, including computing heat loss, B. T. U. ratings, and cost estimating. Special emphasis will be given to theory.

Radio and TV Repair

Courses of instruction for radio and television repairmen to upgrade or update them in this rapidly changing field. The following subjects are offered here:

| | |
|---|---------------------|
| Trouble Shooting | _____60 hours |
| Chassis Alignment | _____60 hours |
| Testing Equipment | _____60 hours |
| Color Television | _____60 hours |
| Course for FCC License—2nd and 1st class | _____144 hours each |
| (A written exam is a prerequisite for the last course.) | |

Machine Shop Theory and Practice

An introduction to the machinist trade and its potential for the craftsman. Identification, care and use of basic hand tools. Layout procedures, power sawing, advanced lathe, drill press and milling machine operations.

Fire Service and First Aid

(No fees required)

The methods and techniques of fire fighting and the administration of first aid. Instructors are trained and certified by the State Department of Public Instruction and the North Carolina Insurance Department. Volunteer fire departments are especially urged to take advantage of this training. (Courses in units of 15 hours each.)

Practical Mathematics

A review of general arithmetic in addition, subtraction, multiplication, division, and fractions, algebra and geometry, and some trigonometry.
120 hours

Electrical Mathematics

An intensive course in technical math needed to pursue the electronics curriculum offered by the Center.

Advanced Electronics

This course will cover instruction in Electronic Circuits and Systems. Prerequisite to this course is Basic Concepts and D.C. Circuits, Fundamentals of A.C. and A.C. Circuit Analysis, and Vacuum Tubes and Semiconductor Fundamentals.

Industrial Drafting I, II

Industrial Drafting I is a basic drafting course for beginning students. Industrial Drafting II is an advanced drafting course for which Industrial Drafting I is a prerequisite.
60 hours each

Technical Secretary

In its entirety this is a day program encompassing 1440 hours. However, a student may desire to take only one or two classes in this program during the day. If so, the student will register in the previously described manner stating the classes desired and the time the class meets during the day. A tentative schedule of class meetings will be available at registration.

Farm Records and Income Tax

A course designed for young adult farmers of both sexes. It emphasizes farm record procedures, how to set up records, and how to complete both federal and state income tax returns. 18 hours

Industrial Speed Reading

Instruction for improving speed and comprehension in reading. A brief analysis of the students' reading rate is made by use of a reading test. Special instruments designed to aid in increasing speed, comprehension, and visual span are used. This course will be helpful to even the poorest readers.

Cosmetology

A course in advanced hairdressing for beauticians and hair stylists to improve or update them in their professional service field.

Power Sewing

Training power sewing machine operators for garment industries. Classes are now being held for three garment plants at the Lenoir County Industrial Education Center in Kinston. Other plants, existing or new, should request this training in their areas. This is a course of intensive training running full time over a period of either one or two weeks. This is given as a day program only.

One-week course 40 hours
Two-week Course 80 hours

Practical Nursing

Courses in this field are for the upgrading of practical nurses who are already licensed.

| | | |
|---|-----|-------|
| Practical Nursing | 155 | hours |
| Unit I. Nursing Care (90 hours) | | |
| Unit II. Medical-Surgical Nursing (40 hours) | | |
| Unit III. Maternal and Child Health (25 hours) | | |
| Geriatrics and Practical Nursing | 20 | hours |
| Personal and Community Health | 32 | hours |
| Practical Nurses in Local Emergencies | 45 | hours |
| (May include Disaster Nursing) | | |
| Practical Nursing in Disaster | 30+ | hours |
| Mental Health and Practical Nursing | 75 | hours |
| Pharmacology and Its Relation to Nursing Care | 40 | hours |
| (For qualified LPN's only) | | |

ADULT DISTRIBUTIVE EDUCATION

Mid-Management Improvement Program

A program designed to upgrade men and women now in the field of distribution and services who wish to develop and improve their management capabilities.

An official MASTER CERTIFICATE signed by state and local school officials will be awarded upon satisfactory completion of a minimum of ten courses.

Required Courses:

MC-1 Business Communication I (Oral)

Develops individual skills in organizing and putting across ideas by effective public speaking. 20 hours

MC-2 Business Communication II (Written)

Effective written communications are covered with special attention to business letters and reports. 16 hours

MC-3 Human Relations in Management

Provides modern psychological techniques to improve employer-employee relations and motivation of personnel. 12 hours

MC-4 Economics of Distribution

Explains how distribution functions in a free economy and the economic factors involved in marketing. 20 hours

MC-5 Advanced Professional Salesmanship

A new course with a modern approach in tested selling methods-designed to secure and close more and larger sales. 20 hours

MC-6 How to Supervise and Train

Furnishes supervisory personnel with methods and tools to carry out effective on-the-job supervision and training.

MC-7 Credit and Collections

Suggests uses of credit in promoting business by providing an understanding of credit and collection procedures. 12 hours

MC-8 Recruitment and Selection

Analysis proven procedures in recruitment and selection to obtain maximum employee performance. 16 hours

NOTE: Select two additional courses from those listed below or other approved courses.

ELECTIVE COURSES

MC-9 Business Calculations

MC-10 Buying for Profit

MC-11 Development of Executive Skills

- MC-12 How to Organize Your Work**
- MC-13 Legal Problems in Business**
- MC-14 Measuring Your Business Performance**
- MC-15 Organizing to Grow**
- MC-16 Sales Promotion**
- MC-17 How to Conduct Profitable Meetings**
- MC-18 Creative Thinking**

EMPLOYEE-IMPROVEMENT PROGRAM

A program designed to upgrade men and women now in the field of distribution and services who wish to develop and improve their management capabilities.

An official MASTER CERTIFICATE signed by state and local school officials will be awarded upon satisfactory completion of a minimum of ten courses.

Required Courses:

C-1 Oral Communications

Develops ability to present ideas clearly and persuasively. 20 hours

C-2 Job Relations in Business

Deals with the art of getting along with people and its importance for job and personal success. 10 hours

***C-3 Business Mathematics I**

Equips individual with an understanding of basic skills in business mathematics which play a significant part in his daily work. 10 hours

***C-4 Business Mathematics II**

Helps the individual improve and apply mathematics skills in everyday merchandising and marketing activities; covers retail formulas, percentages, discounts, mark-up, mark-downs, etc. 10 hours

C-5 How Our Business System Works

Presents the basic principles, factors, accomplishments, limitations and goals of the free enterprise system. 16 hours

C-6 Creative Salesmanship

Stimulates an individual to develop and use creative and exciting methods in selling. 10 hours

C-7 Advertising

Aids in making the best use of advertising as a valuable selling tool. 10 hours

*Persons passing a pre-test in these courses may substitute any elective.

ELECTIVE COURSES

| | |
|-----------------------------------|-------------------------------------|
| C-8 Customer Relations | C-12 Personality Development |
| C-9 Written Communications | C-13 Color and Design |
| C-10 Basic Communications | C-14 Stockkeeping |
| C-11 Product Information | C-15 Interior Display |

AGRICULTURAL TECHNOLOGY EDUCATION

Course Offering

SHORT COURSES WHICH TRAIN FOR INITIAL EMPLOYMENT

Small Engine Repair

Includes the study of the principles of operation, the maintenance and repair of small farm engines. 72 hours

Welding

Includes the study of the principles and application of welding as applied to farm equipment and the development of ability to use arc and oxy-acetylene welding equipment. 144 hours

Tobacco Grading

The main objective of this course will be to train the individual in the basic principles of grading tobacco. This course should be helpful in preparing one for certification under Civil Service as a Tobacco Inspector's Aide.

UP-GRADING COURSES FOR EMPLOYED ADULTS IN NON-FARMING AGRICULTURAL OCCUPATIONS

Pesticides

This course is designed to aid retail sales personnel and others in evaluating agricultural pest problems and in making recommendations to prevent, control, or relieve these problems. 20 hours

Fertilizer and Lime

This course is designed to aid salesmen, manufacturer and others to learn more about economics of fertilizer and lime usage, plant growth and nutrients requirements. 20 hours

Ornamental Horticulture

This course will acquaint home owners and persons interested in training for work in nurseries with the basic principles of Ornamental Horticulture and home gardening. 20 hours

Grain Handling

Includes the study of selection and use of grain handling and storage equipment, the management of stored grain, grading and marketing of grain. 20 hours

Farm Tractor Electrical System

To develop an understanding of the fundamentals of electricity and its application to the farm tractor, and to develop the ability to properly diagnose and repair tractor electrical systems. 30 hours

Farm Tractor Hydraulic System

To develop an understanding of the basic fundamentals of hydraulics and its application to the farm tractor. 30 hours

Farm Tractor-Diesel Engine

To develop an understanding of the basic fundamentals of the diesel engine as it relates to farm tractors. 180 hours

Tobacco Oil Burner Maintenance and Servicing

Includes the study of combustion, pressure atomizing burners, installation and service problems of tobacco oil burners. 20 hours

Liquid Fertilizer Application

The study of NH_3 , Nitrogen solution, and the application of liquid fertilizer to different crops. 20 hours

Meat Packing Industry

Upgrading courses can be offered for those who are employed in this type of occupation.

Milk Producers

Upgrading courses can be offered in sanitation, milk handling and other areas of interest. 20 hours

Dairy Manufacturing

Upgrading courses can be offered in processing of fluid milk and cream, pasteurizing, composition and properties of milk, and the various operations common to a commercial dairy plant.

Agricultural Credit

This course is designed to acquaint agriculture people with the various private, state and federal agencies that extend agricultural credit. 20 hours

Agricultural Marketing

An analysis of the function of marketing in the economy and a survey of the problems marketing faces.

UP-DATING COURSES FOR FARMERS

Courses may be offered for farmers on an area basis where highly technical subjects are involved or where service could be more effectively rendered on an area basis.

SUPERVISORY DEVELOPMENT TRAINING PROGRAM

INTRODUCTION

Supervisory aptitudes may be born in a person, and they may be whetted by his environment and experiences; but the best supervisors, like the best workmen, usually have special training for their tasks.

Philosophy of Supervisory Training

"Supervision in modern business is an art, the principles and techniques of which should be presented in an organized program and learned, just as principles of arts and sciences are laid down and learned in the college and universities of the nation. These principles and techniques are basic to the job that a supervisor must perform in any organization. Better business organizations recognize that an individual must learn the technical aspects of his job before he can be given responsibility, but a supervisor cannot be made out of a technician without giving him certain training to meet the new responsibilities which he faces as a supervisor. A supervisor needs his technical skill plus the knowledge of his authority, skill in instructing, skill in planning and skill in handling people. Much of this should be presented to the supervisor as early in his supervisory career as possible.

Since employees are people, and people—not machines nor buildings—make the organization, it is important that the attitude of employees toward their organization and its policies be favorable. Their attitude will most certainly reflect the viewpoints and actions of their supervisors. A successful supervisory force is one that develops and maintains a coordination of thinking among all levels of management and employees. That coordination can best be fostered by a program of training in which all levels of management participate."

Purposes of Supervisory Training

Purposes of the Supervisory Development Training Program are:

To broaden the educational background of supervisors

To develop the leadership abilities of supervisors

- To provide preparatory training
- To prepare supervisors for advancement
- To provide life-long learning opportunities

Programs Available to Supervisors

- I. Individual Course Program
- II. Block of Course Program
- III. Supervisory Development Training Diploma Program
- IV. Post-Diploma Training

Requirements for Certificates and Diploma

Certificates and diploma for supervisory training are awarded on the basis of: (1) official enrollment, (2) class participation in discussions and projects, and (3) regular attendance. Certificates and diplomas cannot be awarded to those whose attendance is less than eighty per cent of the clock hours assigned each course.

Course Classification by Categories

Each course will be listed under one of eight categories as will be explained. These categories comprise the areas of special knowledge which the supervisor should be familiar with in carrying out his responsibilities.

In setting up a planned program for a supervisor who is pursuing an SDT Diploma, the total course of study calls for sixteen courses, with eight required and eight electives.

"Required courses" simply means that a supervisor must choose one course from each of the eight categories to fulfill the requirement.

The eight "elective courses" may be selected from any one or all categories. This method of selection will allow a supervisor to pursue courses which would be most beneficial to him on his present job, or he could select courses which will aid him to advance to another level of supervision.

The eight categories are as follows:

- I. *Basic Human Behavior and Behavioral Sciences*
- II. *Organization and Management*

III. *Supervision*IV. *Work*V. *Employee Utilization*VI. *Employee Development*VII. *Academic Development*VIII. *Work Safety, First Aid and Health Education, House-keeping and Maintenance**Courses by Categories in Supervisory Development Training*Category I—*Basic Human Behavior and Behaviorial Sciences*

1. Art of Motivating People
2. Motivation and Resistance to Change
3. Problems of Handling People

Category II—*Organization and Management*

1. Principles of Organization and Management
2. Problems in Business Management
3. Effective Job Organization

Category III—*Supervision*

1. Oral Communication
2. Handling Barriers in Communications
3. Communications in Business and Industry

Category IV—*Work*

1. Job Analysis Training
2. Personnel Management—Job Analysis
3. Production Scheduling and Control

Category V—*Employee Utilization*

1. Problem Solving
2. Program Development
3. Waste Reduction

Category VI—*Employee Development*

1. Techniques that Produce Teamwork
2. Material Handling
3. Job Instruction Training

Category VII—*Academic Development*

1. Techniques of Clear Writing
2. Business Letter Writing
3. Technical Report Writing

Category VIII—*Work Safety, First Aid, Health Education, Housekeeping, and Maintenance*

1. Industrial Safety
2. Accident Prevention for Industrial Supervisors
3. First Aid Instruction

FIRE SERVICE TRAINING

INTRODUCTION

Use of Manual

The units of study outlined in this manual are designed to increase the firefighter's technical knowledge and improve his skills in fire-ground operations.

The course outlines (units) are not listed in sequential order and may be presented according to the needs of the individual fire departments. It is suggested, however, that "Firefighting Procedures" conclude any long-range program in which all of the units are studied.

The following titles are the broad classification of material to be presented. For a more detailed-explanation contact the Lenoir County Industrial Education Center.

- TIE C/O 6-1 Forcible Entry
- TIE C/O 6-2 Rope Practices
- TIE C/O 6-3 Portable Fire Extinguishers
- TIE C/O 6-4 Ladder Practices
- TIE C/O 6-5 Hose Practices
- TIE C/O 6-6 Salvage and Overhaul Practices
- TIE C/O 6-7 Fire Stream Practices
- TIE C/O 6-8 Fire Apparatus Practices

BASIC PEACE OFFICERS TRAINING

A program is available for training of Peace Officers in the area. The curriculum guide has been prepared by Mr. James C. Harper, a research assistant for the Institute of Government at Chapel Hill.

The following is a partial list of the courses available in this area.

- I. Courts—Law
- II. Elements of Offenses
- III. Law of Arrest
- IV. Evidence
- V. Search and Seizure
- VI. Motor Vehicle Law
- VII. Court Structure and Procedure
- VIII. Liquor Law
- IX. Techniques and Procedures of Arrest
- X. Law Enforcement Procedures
- XI. General Criminal Investigation
- XII. Human Relations
- XIII. Special Courses

Any interested persons should contact the Center for more specific information.

GENERAL ADULT EDUCATION

This program is designed to give opportunities to adults to take courses in basic education such as reading, writing and arithmetic. Those interested may also take courses on the high school level such as:

- General Mathematics
- Economics
- American Government
- History
- English
- Natural Science

Through the Division of Cultural Development and Community Services, adults may enroll in vocational programs such as:

- Art
- Art Appreciation
- Music Appreciation
- Dress Designing
- Ceramics
- Flower Arranging
- Arts and Crafts
- Others

For further information concerning the Adult Evening Program and General Adult Education, contact:

- Lenoir County Industrial Education Center
- Highway 70 East
- Post Office Box 1296
- Kinston, North Carolina
- Telephone JACKSON 7-2196

INFORMATION ON DELAYED HIGH SCHOOL GRADUATION AND THE HIGH SCHOOL EQUIVALENCY PROGRAM

An effort will be made to offer school subjects for adults who failed to graduate. However, in order that credit be given toward graduation, it will be necessary that a plan be worked out with the State Department of Public Instruction. Those who fit this circumstance should request the needed courses in the following areas by properly registering with our office.

1. Correctness and Effectiveness of Expression (English).
2. Literature (American and English).
3. Social Studies (History, Civics, Economics, Government, Etc.).
4. Mathematics (Arithmetic, Algebra, Geometry, General Math., Etc.).
5. Natural Science (General Science, Biology, Chemistry Physics, Etc.).

Perhaps a more advantageous plan for others desiring certification of having completed a high school course of study is the *High School Equivalency Program*. Under this plan, individuals may take a series of tests called the General Educational Development Tests (GED). Those receiving an acceptable passing score of 225 points with no single test score below 35 will be awarded a High School Equivalency Certificate. This certificate will be accepted on a basis equal to a high school diploma for employment, promotion, or further education.

The GED tests cover five broad areas: *English Expression, Literature, Mathematics, Social Studies, and Natural Science*. They are administered at designated testing centers, the nearest of which is East Carolina College in Greenville.

The following requirements must be met before taking the tests:

1. Minimum age: Twenty-one.
2. Residence: At least one year's bona fide residence in North Carolina.
3. File application on a special form which is available in the office of the Superintendent of Schools.

4. Application must be endorsed and approved by the Superintendent of Schools.
5. Cost: A fee of \$10 for the testing.
6. Have a valid vocational, educational, or other purpose in applying.

Retests may be taken on any or all tests not sooner than six months following the original testing date, or at the end of an intensive training course. Only one retest will be allowed within a twelve-month period.

Suggestions for Preparing for the Examination are:

Adult Classes which are available in the Adult Education Program. Two such classes listed in this catalogue as present offerings should be most helpful for this purpose. They are *Communication Skills* and *Practical Mathematics*. Others should be available from time to time.

Correspondence Courses from:

University Extension Division
 University of North Carolina
 Chapel Hill, North Carolina
 Extension Division
 North Carolina State College
 Raleigh, North Carolina

or from several colleges offering a full high school curriculum through correspondence. Write for "A Guide to Correspondence Study in Colleges" (25 cents) :

National University Extension Association
 Business Office, Building TSMC, Room 112
 University of Minnesota
 Minneapolis, Minnesota

Correspondence Schools offer high school courses and issue a diploma upon completion of the requirements. *Any school selected should be* accredited by the National Home Study Council. Write for free brochure, "Directory of Accredited Private Home Study Schools," to

National Home Study Council

2000 "K" Street, N. W.

Washington, D. C.

Self-Directed Study and Tutoring may be possible if the services of a teacher in the community for tutoring or guidance is available. Teachers who are retired or who may be doing substitute work in the schools would be excellent prospects for this work. The local school principal can probably advise about the availability of such teachers.

Self-directed study without the help of a teacher can be done by mature persons if they have the ability and are willing to spend sufficient time and effort. A person who reads widely, and has become familiar with current knowledge about many topics has broadened his educational background. This kind of information may be found in newspapers, magazines, books and some radio and television programs. Working with textbooks is one of the most fundamental approaches to furthering one's education.

LENOIR COUNTY INDUSTRIAL EDUCATION CENTER KINSTON, NORTH CAROLINA

APPLICATION FORM

"DO NOT FILL IN BLOCKS CIRCLED WITH HEAVY LINES."

| | | | | | | |
|--|---------------|---|------------|-----------------------------------|--------------------------|--|
| NAME MR. MISS MRS. | | (LAST) | (FIRST) | (MIDDLE) | CURRICULUM OR SUBJECT(S) | |
| ADDRESS | | | | | | |
| DATE OF APPLICATION | DATE OF BIRTH | AGE | HOME PHONE | | CENTER CODE | |
| SOCIAL SECURITY NO. | | HAVE YOU PREVIOUSLY BEEN ENROLLED FOR A COURSE AT THE CENTER CHECK <input type="checkbox"/> YES <input type="checkbox"/> NO | | STUDENT NO | | |
| WEEKLY SCHEDULE (CIRCLE WEEKDAYS YOU CAN ATTEND) M T W TH F | | IF YES, GIVE COURSE OR CLASS AND APPROXIMATE DATE ATTENDED: | | COURSE TITLE | | |
| MARITAL STATUS: 1 <input type="checkbox"/> SINGLE 2 <input type="checkbox"/> MARRIED 3 <input type="checkbox"/> SEPARATED 4 <input type="checkbox"/> DIVORCED 5 <input type="checkbox"/> WIDOWED | | DATE | | EXTENSION TYPE | | |
| PRESENT EMPLOYER AND ADDRESS | | NO. OF CHILDREN | | INDUSTRY | | |
| IF SINGLE, GIVE MOTHER OR FATHER'S NAME AND PLACE OF EMPLOYMENT: | | MALE FEMALE | | G V N S P Q T | | |
| IF MARRIED, GIVE WIFE OR HUSBAND'S NAME AND PLACE OF EMPLOYMENT, IF WORKING: | | | | | | |
| GIVE FIRST NAME OF CHILDREN AND AGE OF EACH: | | | | | | |
| LAST TWO PLACES EMPLOYED | | OCCUPATION | | SHIFT YR START. YR STOP. YRS WORK | | |
| 1. | | | | | | |

